The role of cities in global environmental governance:

Rethinking the expectations

Deborah Sherwood, student number 437966

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First Reader:
Dr. Peter Scholten, Associate Professor of Public Policy & Politics

Second Reader:
Dr. Michal Onderco, Assistant Professor of International Relations

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SUMMARY

In the past two decades much attention has been focused on the growing role of cities in global environmental governance. The increasing urgency to develop and implement policies that lead to solutions to environmental problems that are more and more global in nature means that people are looking for new ways to do this, including new ways to cooperate – among others through a growing number of transnational municipal networks.

Rapid and significant changes are difficult to achieve by IOs alone because of their large and consensual nature; and nation states must balance multiple political interests including economic growth, something which is sometimes viewed as being counter-effective to environmental goals. As an alternative, cities have recently been touted as being a level of government that may be much better able to quickly and effectively tackle environmental issues on a global scale, as they are closer to the public, more in touch with local realities, and centers of innovation. The rapid growth in the populations and economic power of urban areas have made cities more self-assured, and they are now demanding more influential roles. They are doing this in part through the development of city to city networks, or *transnational municipal networks* (TMNs), especially in the area of climate change (carbon emissions reductions) and water resilience (flood protection and resource management).

Much of current literature focuses on the exciting new possibilities about how this role can be expanded. However, in practice cities do not have the mandate or the resources to follow through on these ambitions. It is therefore important to keep in mind that cities – as important as they are – fill just one part of the global governance needs to ensure environmental improvement on a local or a global scale. They are dependent for funding and support on regional governments, which in turn must follow national policies. IOs provide an important source of inspiration and knowledge about what needs to be done. The individual and local level remains the heart of action and change. These must be taken all together. This thesis therefore concludes that it is necessary to adopt a multilevel governance approach.

ACKNOWLEDGEMENTS

The inspiration for the topic of this study came from the interviews I conducted in the spring of 2016 at UNESCO-IHE, Delft, for an article in the institute's online magazine, *Update*, about their new city-to-city learning project. I therefore wish to thank the interviewees for their useful contributions.

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This research would not have been possible were it not for the willingness of the interviewees and other respondents to share their knowledge and experience with me. Sincere thanks to all who participated in the empirical research.

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Retrieved from *Global Daily*, August 2, 2015. "Five top climate quotes from mayors at the Vatican: Sixty mayors from around the world met at the Vatican last week to discuss the role of cities in solving global issues like climate change. We're sharing five key quotes from that convening."

Chapter 1 – INTRODUCTION

1.1 Setting a global environmental agenda

The book "Our Common Future" (known as the Brundtland Report), published by the United Nations World Commission on Environment and Development in 1987, was a turning point in global thinking about environmental problems. It called for a holistic view, or 'systems approach', instead of one fragmented by location (generally the national level) or type of problem (air pollution, water resources, deforestation, etc.). It called on the world's nations to work together to develop common solutions. One of the document's breakthrough statements was that there needed to be a focus on *cities* and their role in finding solutions to this growing and complex global challenge. Global response was immediate, and municipal networks sprang up, but these efforts have to date been largely uncoordinated, and questions about how best to move forward remain largely unanswered with regard to both the 'why' (specific aims and targets) and the 'how' (what steps, whose responsibility).

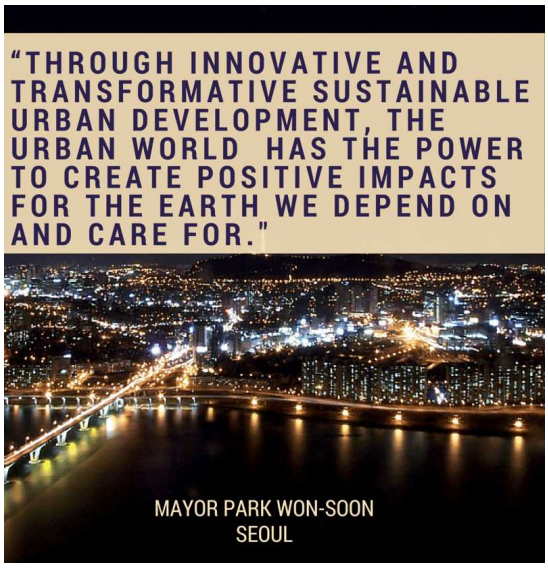
Although much research has been conducted in the past two decades on city-to-city networks, better known in the literature today as 'transnational municipal networks' or TMNs, a conceptual framework with which to focus the development of these networks is still nascent. The international community has placed high expectations on cities to find and implement environmental solutions, and cities themselves have eagerly taken up the new role, claiming to be the new 'green' heroes. Cities are argued to be a small enough scale of government that direct participation by citizens is possible and where a systems approach can be attempted – as opposed to national and international efforts, which are so large that decision-making and implementation processes are much more formal, cumbersome and time-consuming. In addition, the horizontal, peer-to-peer cooperation of municipal networks, as compared to a top-down hierarchical structure, are seen as allowing more room for innovation and new ideas that can stimulate true progress towards sustainability and resilience. One of the main questions within this growing field, however, is whether the emergence of these municipal networks is in fact giving cities more mandate and responsibility within this global effort – and, more importantly, whether these new networks are effectively leading to new solutions in environmental policy.

Together with other sectors of society, scholars and policy-makers have been working on these issues and have developed multilevel governance and network theories to include building global environmental governance, with a significant role reserved for cities. This thesis looks at the phenomenon of municipal networks within these theoretical contexts, with the aim of adding to the understanding of this growing field.

1.2 The rise of municipal networks

Growing populations and increasing environmental unpredictability are creating new and urgent challenges for urban policy makers. In response, cities around the world are forming networks and partnerships to learn together and from each other about how to adapt their policies to become more economically, socially and ecologically sustainable and resilient. More and more, cities are looking to each other for ideas and support in dealing with the massive challenges they face. International targets and goals have spawned a plethora of peer-to-peer learning initiatives, sponsored and/or otherwise supported by a variety of actors, from international organizations, to academic research institutes, governments, business and industry, and private philanthropic foundations. The role of cities in global environmental governance will be explored in this thesis by examining these different kinds of networks, and actors in different capacities within them.

City-to-city networks are contributing to a more decentralized and multi-institutional approach to the world's interconnected needs. Cities are gaining a stronger voice in national and international policy-making. This is happening in part due to national governments transferring responsibilities to local governments (Jans, 2015). Furthermore, the growing economic influence of cities translates into their growing confidence, and cities are taking on new leadership roles (Sassen, 2002). Yet this new independence is coupled with uncertainties. The challenges are unprecedented, and national governments are often not able to provide the needed support, due to slow bureaucratic processes or a new distancing from local issues, coupled with a lack of sufficient available funds. Cities are finding themselves "scrambling for practical tools and examples of successful and workable approaches" (Beatley, 2000). In the midst of these upheavals on so many levels, how can cities find their way in the web of 'wicked problems' and potential solutions? How do they find networks that can help them with their unique sets of questions, and how do the various city-to-city networks differ from each other in focus and learning methods?



Although the focus to date has been partnerships between cities in the developed countries of the Global North, these networks are slowly broadening to include North-South and South-South information sharing. Information sharing is easier with technology than with policy. 'Policy transfer' is limited by local political, social and natural contexts. However, ideas and technologies

that can support a shift to greener cities are being discussed in city-to-city networks. Managing transportation and waste flows, controlling urban sprawl, securing the supply of energy and clean drinking water, creating and maintaining green-blue areas (Pötz & Bleuzé, 2012), designing environment-friendly buildings, and encouraging green economies are some of the physical and policy solutions being explored by the world's cities today (Beatley, 2000).

1.2.1 Glocalization

As a planet, we are struggling to find effective means of addressing urgent environmental questions. More and more, we are realizing that social, political, economic and environmental issues are intertwined, and that humans are inseparable from nature; when seeking solutions, we must look at all of these areas together. International efforts to tackle problems such as climate change and overfishing have generally been haphazard and single-issue; the international community tends to look for solutions to one problem at a time. However, this approach generally leads to results that are too little, too late. Cities therefore a real alternative for action. Being a small-scale level of government makes them much more flexible, quicker to respond, and more amenable to innovation.

Yet what works in one city might not be effective or applicable to another. Making sense of the collaborative efforts that abound and building a framework to help us understand what works and doesn't work in what circumstances (e.g. topographical and geological features, economic and political structures, social concerns, and existing links to other local and regional partners) is therefore important.

The phrase 'think globally, act locally', a slogan that has been used in the environmental movement since the 1970s, is attributed to Sir Patrick Geddes (1854-1932), a Scottish social activist and town planner. In his book "Cities in Evolution" (1915), Geddes wrote that although travel inspires, and useful lessons can be learned abroad, people – city planners in particular – should not attempt to recreate back home the 'local character' experienced on one's journeys, as this simply leads to obstacles and delays in town planning. Instead, it is important to realize that "each valid scheme should and must embody the full utilisation of its local and regional conditions, and be the expression of local and of regional personality" (Geddes, 1915, p.397). The importance of the local context, in terms of traditions, economic and political structures, and methods of social learning, mustn't get lost amidst the whirlwind of globalization. The term 'glocalization' captures the essence of this concept.

The following section zooms back out to place TMNs in the global context.

1.3 Transnational municipal networks (TMNs) today

In the past few decades, transnational municipal networks have received much attention as a form of multilevel governance. TMNs are viewed as being part of both the product (through decentralization) and the cause (through the creation of new types of vertical and horizontal policy partnerships) of the ongoing changes in the way we think about international relations and best practices in addressing complex global challenges. Although city-to-city collaboration and policy learning is not new, the recent explosion of TMNs has led researchers and practitioners to examine more closely their purpose and effect. Among others, there is a need to conceptualize these networks and their place in the larger context of global environmental governance. Section 4.2, in the Context chapter of this thesis, describes the formation of some of the world's most prominent TMNs.

There are a number of drivers behind the development of TMNs and the vertical and horizontal networking taking place in international governance and decision-making in the implementation of sustainability and resilience policies and practices: 1) the growing role and availability of internet, which is facilitating global communication at all levels of society; 2) a growing urgency to find solutions to deepening environmental, social and economic problems; 3) top-down, horizontal and bottom-up partnering for action on international agreements such as the UN SDGs and climate change protocols; 4) the strengthening of sub-state diplomacy, transnational NGOs and citizen groups, together with growing collaboration between knowledge institutes and city governments as well as public-private partnerships; 5) an apparent transferring of implementation responsibilities from nations to cities, part of the larger shift from public administration to new public governance; and 6) the global demographic move toward urban environments, which is placing new and unexpected strains on city governance as well as creating an increase in the economic and political power of cities within their nations. This increase in the power and influence of cities, described among others by Sassen (2002) and Barber (2013), is a central idea within TMN literature.

This growth of TMNs is extensive and decentralized, and is being steered at multiple levels of society. Understanding why and how this new type of policy learning is taking place is important for the effective development of these networks. This thesis looks at one aspect of this process, namely the types of interaction and collaboration taking place within these networks. As cities look to each other for answers and support, this study aims to add to political theory and policy science on this topic and to help urban policy-makers understand more about city-to-city learning environments in the field of sustainability and resilience.

1.4 Problem statement

While conducting interviews for an article at UNESCO-IHE in June 2016, I learned that city-to-city learning is a new area of international cooperation with exciting potential for creating real change in the way cities think about and develop their environmental policies. Partnerships between cities around the world are forming a big area of study, and a lot of activity is happening in terms of global conferences and the promotion of cities as being the ones to follow. Yet a question that remained for an observer to this new development within the institute was: there is a lot of talk and a lot of meetings, but – behind the hype – is anything new actually being accomplished? Do these city-to-city networks have a real effect on city policy-making?

Two of the leading scholars in the fields of city-to-city learning for environmental sustainability are Harriet Bulkeley and Joyeeta Gupta. These two colleagues have different ideas about what can be expected in terms of the new contributions cities and especially city networks can make to global environmental policy. While Bulkeley focuses on the possibilities for new types of cooperation between levels of government and between municipalities on an international scale that can lead to policy learning and greater success in developing and implementing sustainable policies at the municipal level, Gupta cautions that the praise and hopes about the growing role and achievements of municipalities does not take into account the fact that economic and political incentives remain the basis for decision-making and block the way to any real change toward environmental and social justice or sustainability goals. Both are correct, and both are making important contributions in this discussion. The root of the question that inspired the research for this thesis is how much of the excitement about cities is true: are they, through their new networks, in fact forging new paths into innovative solutions with strong local support – are cities the wave of the future in environmental policy and action? If so, why has there been so little in terms of actual results? Is it simply that these networks are new and need time to grow and develop, or is the idea that cities will save the world an unfounded hype; are there factors that are blocking these paths and that need to be considered and addressed? For example, in city networks, to what extent are city-level actors able to act independently vs. remaining dependent on a top-down hierarchy? Koon-hong Chan (2016) writes that "scholars of international relations have largely neglected the role of cities in global governance". The aim of this research is to add to the understanding of this question.

1.5 Research design

In their article 'Cities and the Multilevel Governance of Global Climate Change', Michele Betsill and Harriet Bulkeley (2006) argue that cities may be "the most appropriate arena in which to pursue policies to address specific global environmental problems". Noting the growing existence of TMNs, they state the importance of developing "a conceptual framework that can

capture their role and impact and hence provide a more complete understanding of global environmental governance".

Recognizing that Harriet Bulkeley is one of the leading experts in this field, I emailed her with the question of which of two topics would be the more interesting to pursue in terms of gaps that she saw in the knowledge base about TMNs. I wrote: "What topic do you find more useful to your field at the moment: 1) How are cities filling the gap left by states in environmental governance? or 2) What means are cities using to collaborate that are different from those of states and trans-national organizations and institutions?" She responded, "Both of the questions you pose are of interest. The extent to which cities are 'filling the gap', or indeed being enrolled in this through the states e.g. the INDCs, is an important one – are cities volunteering here, or are they being championed by states who do not have the agency/capacity to act? The second issue, of the kinds of collaboration that are being used is also key – here I think there is a great need to understand how/why different approaches are effective." These suggestions inspired the research question and sub-questions.

1.5.1 Research question and sub-questions

The many aspects of TMNs introduced in this chapter show how broad and complex this emerging field is. It is important to dedicate attention to the particular role cities can play in creating sustainability policies. The main challenge within this field is to form a conceptual framework that can describe and categorize the role and functions of TMNs within global environmental governance. However, the scope of a Master thesis is necessarily small, and this research focuses on just one aspect of TMNs, namely the types of interaction that take place among their participants.

The research aim of this thesis, therefore, is to shed light on the interactions of cities within transnational municipal networks (TMNs) that are focused on an aspect of global environmental governance. As is explained in the theory chapter, these networks involve interactions that are both vertical (between international organizations, national governments and municipal governments) and horizontal (networks between cities and between different actors within these cities). Because little research has been done on this specific topic to date, it is useful here to define these interactions broadly, i.e., not just the interactions that foster or hinder collaboration and success, but also the policy landscapes and other conditions that influence these interactions; and not just internal interactions between the representatives of the member cities, but also with the network coordinators and initiating organizations. The word 'participants' is used in this thesis to include all of these actors.

The underlying question that focuses the research is:

> *How do the interactions of cities within transnational municipal networks (TMNs) explain the role of cities in global environmental governance?*

In working towards a conceptualization of this role, the research will address the following sub-questions:

1. *What kinds of interactions can be found within TMNs?*
2. *How do these interactions impact the ways in which cities take part in global environmental governance?*

Breaking the question and sub-questions down into dependent and independent variables, the dependent variable (DV) is the role of cities in global environmental governance, and the independent variables (IV) are the kinds of interaction that TMNs engage in and the effects of these interactions on how cities take part in global environmental governance.

TMNs come in all sizes and formations, yet there are very few categorizations of city-to-city networks in the literature. When they have been categorized, this has been by geographical region (continent) or by focus topic. To add to this research, a different type of categorization is applied in this thesis, namely by type of initiator. This thesis distinguishes four categories: international organizations, including the EU; municipal governments; private organizations; and academic institutes. This categorization focuses a third sub-question, the answer to which will be extrapolated from linking the responses to the type of network the respondent is a member of. This sub-question is, namely:

3. *Does the type of network initiator influence the type of interactions that take place within TMNs?*

Finding answers to these sub-questions will be done by interviewing experts and city representatives to learn how they see the interactions within the TMN they are a member of. 'Experts' in this context means the organizers and coordinators of city-to-city learning networks and environments. Through their experience as leaders within these networks, they are familiar with the official goals of the networks as well as the individual aims of the participants.

The results will be described in the empirics chapter, and analyzed and discussed in the analysis and conclusions chapters.

1.6 Relevance of the research

1.6.1 Social relevance

This social aim of this thesis is to help initiators, organizers and participants of TMNs to better conceptualize the roles and functions of these networks, and thus their own roles, within the field

of global environmental governance. By distinguishing the types of interaction experienced by participants in different types of TMNs, this thesis aims to help city policy-makers, civil society and governments at all levels to understand more about current city-to-city policy learning environments and the means of collaboration. The ultimate aim is to determine what types of collaboration within TMNs are most effective, so that these processes can be shaped and guided to best meet the goals of the networks. Although that aim is beyond the scope of this thesis, a start is made by defining the types of factors that can be considered when working toward it.

1.6.2 Scientific relevance

Transnational municipal networks are part of the changing public policy scene that is reshaping international relations and multilevel governance. The stated goal of these networks is peer-to-peer policy learning, particularly in the areas of environmental sustainability and resilience. Yet not much has been studied as to the internal workings of these networks and how this learning is taking place. According to Bansard et al. (2017), "the institutional architecture of transnational municipal networks (TMNs) is not well understood". Gupta (2008) writes, "Much work has also been done on policy instruments at the national level. Few articles have examined the implementation of policy in domestic contexts, given the different political and administrative structures and the trend towards decentralization of powers to provincial and local authorities." Betsill & Bulkeley (2006) furthermore state that because transnational networks of subnational governments are increasingly common, "It is imperative to develop a conceptual framework that can capture their role and impact and hence provide a more complete understanding of global environmental governance". The scientific aim of this research is therefore to shed additional light on this process and the types of interactions within municipal and regional networks, thereby contributing to political theory on this topic.

1.7 Thesis overview

The purpose of this study is to describe and analyze the role and function of cities within the context of global environmental governance. The thesis is structured as follows.

The theory chapter (2) presents the theoretical framework within which the research question and sub-questions will be examined, and poses hypotheses (expectations) about how they can be answered. The theories selected for this research are: 1) multilevel governance, which is broken down into vertical (government) and horizontal (network) components; and 2) network theory, with a special focus on TMNs.

Next, the methodology chapter (3) explains how I went about answering the research question and sub-questions. Operationalization of the research was done through case studies of the various cities and organizations selected for this study; the case studies involved interviews with

network participants, attendance of a TMN kick-off meeting, and participation in a regional webinar.

The context chapter (4) then sketches the background of some of the main transnational municipal networks, including why and how they formed, their aims, and their stakeholders. It also introduces the respondents and the city or organization of which they are a part. This information is based on both desk research and the interviews, and gives a conceptual framework for the empirical results.

The empirics chapter (5) presents the responses of the interviewees that are relevant to the research question and sub-questions.

The analysis chapter (6) summarizes and discusses the empirical findings, relating them back to the theories.

The conclusion (7) summarizes the analysis of the findings, answers the research question and sub-questions, describes the implications of the results for the theory and for policy, and offers suggestions for future research.

Chapter 2 – THEORY

2.1 Introduction to the theory chapter

This chapter explores the two theories used in this study to understand transnational municipal networks within global environmental governance. These are: 1) *multilevel governance* (MLG), which is the main theory used in the literature to describe global environmental governance and includes the municipal level; and 2) *network theory*, selected because the changing role of cities in environmental governance is expressed most strongly through the formation of transnational municipal networks (TMNs), and in order to better understand this phenomenon it is important to look at whether and how TMNs – as a new and specific type of network – fit within general network theory.

With these theories, we are trying to understand the role of cities within the context of global environmental governance. For this, we need to look at both the vertical relationships (MLG) and horizontal relationships (MLG and TMNs) in which cities develop their environmental, sustainability and resilience policies. In considering the vertical relationships, the aim is to see whether cities are starting to work more independently from other levels of government (regional, national, international). Exploring the horizontal relationships will help us to learn about the types of interactions that cities are engaging in when participating in TMNs, as well as what types of partners they are engaging in policy development efforts (i.e., what sectors of society these partners come from).

The two theories overlap somewhat: MLG includes a network aspect, and TMNs include aspects of MLG. First, multilevel governance literature is composed of two strands: vertical connections (i.e., different scales of government: international, national, regional, local) and horizontal connections (i.e., networks: partnerships between government and non-government actors). Second, network theory in this thesis is compared to transnational municipal networks, and TMNs involve both the horizontal and vertical aspects of MLG – the most obvious are the horizontal connections (in TMNs these are certainly intercity relations, but also intracity relations, e.g. public-private partnerships, described in MLG), but the vertical aspects typical of MLG also influence the range of options open to TMNs, as will be described further in this thesis. The following sub-section describes more closely the relevance of each of the theories to the research topic of this thesis.

2.1.1 Relevance of the theories to the research topic

Multilevel governance looks at how roles and responsibilities are divided and/or shared between different levels of government (international, national, regional and local) in decision-making and policy formation. It also applies the institutionalist perspective that the behavior of actors is not

determined only by formal laws, but that actors in part also determine their own behavior through semi- and informal interactions and agreements. This thesis therefore looks at how cities are influenced by other actors, i.e., through their peers in TMNs as well as non-government actors within the networks of their own municipality.

Network theory will be explored to see whether traditional network theory accurately explains the new types of networks that are emerging and evolving in transnational municipal networks, or whether TMNs are diverging from this assumption. Both traditional network theory and TMNs will therefore be examined. As mentioned in the introduction, one of the main questions on the topic of transnational municipal networks is whether cities are taking up new roles in policy-making and implementation that previously belonged solely to nation-states, and if so, how that is happening. TMN theory will therefore be compared with the empirical findings about what kinds of interactions are actually taking place within these networks, to see if cities are indeed taking on more responsibility in environmental governance.

2.1.2 Content of this chapter

Section 2.2 explores the main theoretical framework applied in the literature to global environmental governance, namely *multilevel governance* (MLG). As mentioned above, multilevel governance theory is broken down into two components. Lidskog & Elander (2010) sum up the two components of MLG as proposed by prominent authors in this field:

> "There are basically two types of multi-level governance, one emphasizing 'the multiple tiers at which governance takes place, typically differentiating between administrative units (e.g. cities, states, countries) where governments are the central governing authority', the other one 'dominated by networks between public and private actors across levels of social organizations' (Betsill and Bulkeley, 2007, p. 449; Marks and Hooghe, 2004)."

Sub-section 2.2.1 describes the vertical component, i.e., the connections between different levels of government. Sub-section 2.2.2 then describes the horizontal component. Although in MLG theory horizontal relationships include all levels of government, the main focus here will be on cities, i.e., city-to-city (peer-to-peer) networks as well as partnerships and collaborations between different government and non-government municipal actors and stakeholders.

Next, section 2.3 looks at network theory, and section 2.4 explores transnational municipal networks in particular. Section 2.5 summarizes the theories and uses them to form expectations about the answers to the research question and sub-questions.

2.2 Multilevel governance

2.2.1 Introduction to MLG

Multilevel governance (MLG) is a field of political science research that looks at the vertical and horizontal interactions of various actors and their influence in the policy-making and implementation spheres. The shift from a purely 'government' focus in societal decision-making (and within that, a focus on nation-states as the primary decision-makers in forming environmental policy) to the broader forum of 'governance' took place in the 1980s, by which it is now generally accepted by scholars and practitioners that multiple levels of society – government, the private sector (businesses and technological innovators), research institutes, NGOs, civil society and individuals – all have important roles to play in securing long-lasting, sustainable change in overall practice. Although the environment is not the only policy area being discussed in the multilevel governance literature, within TMNs climate change mitigation/adaptation and water management are two of the most prominent.

Multilevel governance theory arose from the complexity of European integration (Hooghe, 1996), in which nation-states retain sovereignty within a larger political organization (the EU), and where the EU has exclusive competence over some policy areas but other policy areas are shared competences. Outside the context of the EU, MLG literature touches lightly upon international organizations as an influence in policy target-setting but focuses mainly on nation-states and sub-state relations.

MLG concerns the various interactions that influence policy-making. 'Governance', therefore, refers here to the policy cycle (Scholten, 2016), i.e., the four stages of policy-making which form a continual process: defining the problem, identifying solutions, implementing the solutions, and evaluating the results. If we indeed think of governance as not just government but all sectors of society (all stakeholders, including 'unheard voices'), as many scholars do, this becomes quite complicated. Inclusion of all of these levels of society has been touted in the MLG literature as a way to ensure the long-term success of environmental policies. However, as can be imagined, and as is clearly identified in the literature, the vastness and complexity of these interactions, not only in government but in virtually all parts of society (technology and innovation, civil society and NGOs, private business, academic research and individuals) makes it extremely difficult to grasp and conceptualize what MLG really is and how it can best be organized.

Confirming this, Hooghe & Marks (2003) refer to MLG as being the "reallocation of authority upward, downward, and sideways from central states", noting that "beyond agreement that governance has become (and should be) multi-level, there is no consensus about how it should be organized". Some of the questions that emerge are: What is the best level for action? How can roles and responsibilities be efficiently and effectively divided between different levels of

government, and how can we ensure that tasks are not duplicated by other sectors of society? How can mandate and legitimacy be defined in this context? Who is responsible for setting targets, developing solutions and measuring policy results? How can policy learning be achieved in MLG? Furthermore, if we truly expand this to a global level instead of just the Global North, which currently dominates these discussions, how do political differences affect how cities develop and enforce policies, and to what extent do cultural differences in leadership style and expectations constrain city-to-city (or peer-to-peer) learning?

Despite the difficulty of grasping MLG as a whole, there are many success stories of projects and policy-making. In the Netherlands, for example, national support and subsidies allow municipalities to develop 'greener' approaches to energy, architecture and urban design. This type of multilevel cooperation is being praised by global environmental governance practitioners. Aziza Akhmouch, head of OECD's water governance program, said in a 2013 interview for *Water Governance* (Havekes & Hofstra, 2013) that "the OECD work on water is horizontal, integrated and multidisciplinary". She noted that the Netherlands' excellence in water management can be attributed to its "distinctive multi-level governance arrangements, centur[ies]-old institutions, and consensus-based decision-making through the Dutch 'polder approach'". She further points out that "climate change will affect water availability and the resilience of water infrastructures." Warning that excellence can lead to complacency among citizens, she encourages continued public awareness campaigns and the involvement of property owners, businesses and municipalities in water management – a sentiment typical of the network component of MLG described in sub-section 2.2.3.

2.2.2 Vertical connections: government

In a study of sustainability policy-making in Newcastle Upon Tyne and Cambridgeshire, Bulkeley & Betsill (2005) observed that despite a commonly-held view that sustainability at the local level is dependent upon intra-urban processes (e.g. inter-departmental tensions, the competency of policy-makers, and the entrenchment of institutional practices and coalitions), "the interpretation and implementation of policy goals for sustainability have been shaped by forms of governance which stretch across geographical scales and beyond the boundary of the urban". They argue that there is therefore a "need for a renewed approach to environmental politics, one which is able to bring into plain view the multi- and transscalar nature of environmental conflicts, and the consequent implications for sustainability". The shift from the view that policy goals, interpretation and implementation is contained within just one level of government to that of an interaction between these levels – and, consequently, an interest in discovering how to use these connections to be more effective and efficient and to share knowledge and resources – is at the root of the vertical component of multilevel governance.

The ways in which this can be manifested depends greatly on national political systems. As mentioned above, Dutch municipalities receive specifically designated financial support from the national government, among others for green innovation and energy savings, giving them the resources they need to carry out such projects. In many other countries, cities do not receive national funding and thus do not have the ability to move forward as easily with developing sustainable goals and policies. Gupta (2008) writes about the difference in structure between the national governments of France, Italy, the Netherlands and China, and how this translates into differences in how sub-national and municipal governments approach policy-making and implementation. Within the EU, the "transfer of responsibility to the local level as well as to the European Union level often creates confusion as to who takes measures", making policies difficult to coordinate. She notes that regarding climate change, with the relative exception of the Netherlands, there is no clear division of responsibilities between different authorities. Resources thereby form a limitation to action.

> "Where the devolution of power [from national to local authorities] is not accompanied by the transfer of sufficient resources (e.g. France), this limits the ability of local authorities to take the necessary action. In centralized systems, a major barrier for action is the lack of resources (e.g. China), although this problem is being dealt with in the Netherlands through a subsidy system."

In addition to resource allocation, effective action depends upon defining roles and dividing tasks. To meet national targets and common goals, and to achieve greater coherence in policies, national governments are redefining their relationships with lower levels of government. Gupta notes that where the different government levels have different tasks, such as the municipal jurisdiction over "spatial planning, local transportation, housing and energy", and the national mandate to provide, among others, regulation of large industry, the different layers can and must develop their own specialization within the broader aim of sustainability.

A key point of discussion in this area of multilevel governance literature is whether or not there is a 'most appropriate' level for climate change action, and if so, what that is or should be. Gupta (2008) nicely sums up the arguments of various disciplines, showing that this is still a growing science:

> "International law and relations scholars automatically perceive climate change as a global issue and call for a global concerted and orchestrated process to deal with the problem. Development scientists and political geographers question the wisdom of focusing solely at this level, arguing that the international level is weak and ill-suited to create the mass movement needed to generate the complex and context relevant solutions needed for such a comprehensive problem such as climate change. They call for

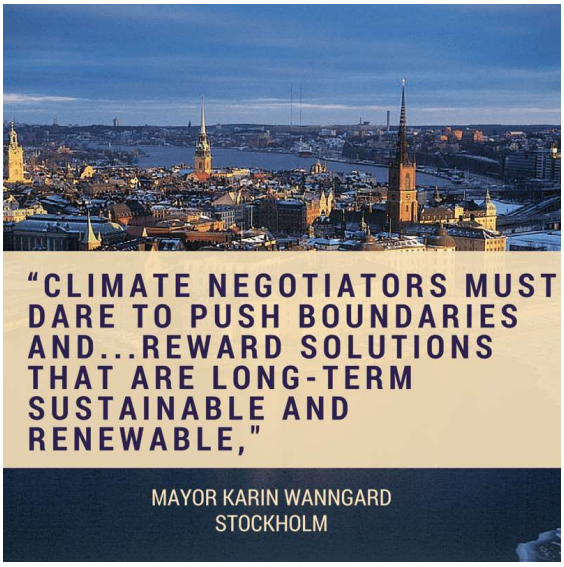
decentralized processes and actions that focus on what can be done at the local level, often even bypassing the nation-state level. Economists would most likely argue that local level action may well be justified, but since we live in a global era and competitiveness in the international arena is a critical feature of policies, action at the local level will remain limited. This is referred to as the 'territorial trap' within which mindsets are caught (Agnew, 1999)."

If we return to the study of Betsill & Bulkelely (2005), it seems likely that collaboration and overlap between different levels of government is often already present but not yet fully recognized or defined. Perhaps with more research and attention, the 'territorial trap' described by Gupta can slowly be overcome.

2.2.3 Horizontal connections: networks

Inter-sectoral partnerships occur at all levels of governance, including international regimes. The difference, as described by Bestill & Bulkeley (2006), is that international regimes are top-down hierarchical, whereas transnational municipal networks – they use the example of the Cities for Climate Change (CCP) program – are inherently horizontal in nature. Because this thesis focuses on cities, this sub-section will discuss horizontal networks as they occur in the municipal context.

As with the vertical connections described in the previous sub-section, resources and task delineation are important factors in municipal sustainability policy-setting and implementation. Resources include technological, leadership and funding capacity. Although green technology is becoming increasingly available, municipal politics generally do not lend themselves to quick or significant change towards greater environmental sustainability. As pointed out by Lidskog & Elander (2010), there is currently no economic incentive for cities to want to switch to more ecologically sound practices. They note that despite the development of sufficient technological capacity, "green values, green ideology and green democracy are not enough. There is also a need for institutions that can mobilize power resources and challenge fundamental interests in society in favour of efficient and democratic environmental governance". They suggest that "these institutions must include strong decision-making structures, binding agreements and rules, structures for distributing accountability and efficient systems of legal sanctions". But they question where it is possible to find such institutions.



Indeed, at the municipal level, this binding authority is rare and often not desirable. This is an issue at other levels of government as well. At the international level the sovereignty of nation-states hinders enforcement of agreements, and at the national level the decentralization happening in many liberal democracies (Liftin, 1998) is eroding authority and mandate. The alternative offered by horizontal MLG is the encouragement of peer-to-peer learning and the sharing of knowledge, information, technology and even resources. Sometimes this happens through public-private partnerships, in which mutual goals are reached by pooling resources and support. The danger with public-private partnerships is that, once again, private financing usually comes with a need for economic profit. However, in cases where the public will for ecological sustainability is strong enough to influence commercial practices, this can certainly be a win-win situation.

Public will is certainly important in civic decision-making. Kern & Alber (2009), writing about climate change policy, see that "in most OECD countries", competing demands and the fact that local governments "have limited mandatory responsibility in this policy area" make it difficult to prioritize sustainability. Lidskog & Elander (2010) emphasize that citizens must have knowledge and understanding of the technical and financial aspects of environmental governance in order to be able to make informed decisions. What is needed, they say, is the spread of information and building of local power; citizens would then pay more attention and be more willing to get involved and dedicate time and effort to the cause.

To reinforce the discussion of democratic mechanisms as being a way toward success in sustainability policies, Lidskog & Elander further state:

> "… it is crucial that the formal structure of government institutions acknowledges and strengthens links to the parallel structure of informal, voluntary associations such as social movements, environmental associations and NGOs at various levels, including the World Social Forum initiatives. Although such participation and deliberation on a global scale are necessary to meet the challenge of global warming, there is also a need for representative institutions armed with the legitimacy and power to withstand actions of powerful interests that pose substantial threats to human health and the human environment".

They therefore believe that the vertical and horizontal components of multi-level governance can be complementary, and they hope that these different spheres of authority can "serve as a breeding ground for deliberation, common understanding and innovations".

Ostrom, a Nobel laureate in economics, also acknowledges the need for a diversity and complementarity of actors and governance levels. She discusses global environmental

governance and politics in the context of common pool resources. She emphasizes the need to move away from the idea that common pool resources such as fisheries and forestry are most effectively managed through globalized policy and centralized enforcement. Instead, she argues for acceptance of the inherent diversity and complexity of institutions and management schemes, and that this will allow for local successes that will add to aggregate global success. Local knowledge about local ecologies must be recognized, and a multi-layered governance framework can lead to increased sustainability and system resilience (Ostrom, 2009, 2011). Although Ostrom's work does not fall directly under the theory of multilevel governance, this idea of local knowledge being crucial for policy success, and especially that there needs to be a common framework for data collection and analysis, can further this theory and provide impetus for developing common data.

Lidskog & Elander (2010) discuss an example of this already happening through "initiatives of transnational city networks, such as ICLEI's Carbon Disclosure Project. In August 2008 around 30 urban centres in the USA agreed to the same methodology to monitor and disclose their emission data". They see a problem in comparing cities that do not use the same methodologies; to address this, governments can be facilitators in standardization of methods and target schemes. On the other hand, another challenge might be comparing cities that *do* use the same methodology, because negative feedback might affect voluntary participation in such networks.

2.3 Network theory

2.3.1 Introduction to networks

This section focuses on networks and their workings. In the empirics and analysis chapters, it will be important to determine whether transnational municipal networks fit within the scheme established by network theory, or whether these new types of networks are charting their own path in the context of multilevel governance. TMNs are seen as strong new players in global environmental governance; in determining whether this assumption is correct it is necessary to review the characteristics of networks and how TMNs may differ from other actors such as nation states and international organizations (IOs). For one, IOs take a long time to set up and, once in place, are very stable and hard to change. Networks, on the other hand, due to their informal nature, are "time-consuming to [establish] and fragile to maintain" (Kamensky & Burlin, 2004, Ch.1). The level of reliability and continuity is lower in networks than in IOs; this is something that must be kept in mind when forming a theoretical framework about TMNs.

2.3.2 General network theory

In their textbook on public policy, Howlett & Ramesh (2003) present the central ideas of network theory in the social sciences context. They begin by describing differences in the level of participants' involvement in networks. Those directly and actively involved form 'interest

networks', while those more loosely associated with the network are known as the 'discourse community'. The goals and activities of the interest network are based on shared material interests, while the discourse community provides support in the form of knowledge and/or expertise. 'Network management' – a reorganization of government – is a tool for retaining the legitimacy or capacity to act, although intentional change has become increasingly common as a policy instrument.

Rhodes, writing in Britain in the 1980s, argued that "networks varied according to their level of 'integration', which was a function of their stability in membership, restrictiveness of membership, degree of insulation from other networks and the public, and the nature of the resources they controlled" (Howlett & Ramesh, 2003., p. 150).

In the 1970s, on the concept of 'subgovernment', Heclo wrote that in the US, interest groups, congressional committees and government agencies formed 'iron triangles', which were "system[s] of mutual support over legislative and regulatory matters"; yet that these iron triangles were not as rigid as assumed. Instead, they were influenced by what he termed 'issue networks'. These were "larger, much less stable, had constant turnover of participants, and were much less institutionalized than iron triangles" (ibid., p. 148-9).

Studies in Europe and America refined the concept of subsystems. 'Policy networks' were "those links joining the state and societal actors together in a policy process" (ibid., 150). Like interest networks, policy networks are interest-based, with the aim to further their own material ends, and are distinguished from 'policy communities', which are idea-based, similar to the previously used term of 'discourse communities'.

In 1993, Jenkins-Smith and Sabatier described 'advocacy coalitions' as "actors from a variety of public and private institutions at all levels of government who share a set of basic beliefs… and who seek to manipulate the rules, budgets and personnel of governmental institutions in order to achieve these goals over time". Advocacy coalitions include "both state and societal actors at the national, subnational, and local levels of government" (ibid., p. 152). They are based on shared knowledge of a public problem and common interest in pursuing solutions. Different from the discourse and policy communities which also included broader membership than government, advocacy coalitions have self-serving goals. Their success depends on "money, the nature of the problem, natural resource endowments, cultural values, and constitutional provisions". These factors are all predictable, whereas other factors necessary for success are not: "public opinion, technology, level of inflation or unemployment, and change of political party in government" (ibid., 152).

In a presentation for the OECD which, though focused on networks in the context of technology and innovation, overlapped in terms of ideas with governance networks, Jason Owen-Smith (year unknown, link provided in References) noted that networks which have a focus on innovation (i.e., resource and information channels) allow for easier access to information due to their centrally organized structure, but have the challenge of redundancy. In networks dependent on status signaling and certification, the focus is discovery or adoption, innovation is risky and non-conformist, and status "confers freedom of motion under some conditions and locks participants into strategies under others". The challenge in these networks is static conformity. The oldest type of network, says Owen-Smith, is that of social influence. Here the focus is on "adoption and diffusion, not discovery. Adoption is a matter of access, influence, and visibility." Here the challenge is 'groupthink'.

Owen-Smith listed ten proclaimed benefits of networks. Those relevant to this thesis topic are that they: create social capital, status and trust; form an alternative to hierarchies; are a 'defining feature' of innovation; inspire conformity and create preferences; and "shape the diffusion of technologies and organizational practices". He further writes that although networks carry benefits, they also come with social obligations and rules of practice. In the setting of governance, this would be expected to limit the operational maneuvering room for policy-making.

Section 2.4 will look at these expectations in the specific context of TMNs.

2.4 Transnational municipal networks

Kern & Alber (2009) write that "the involvement of cities in national and transnational networks … facilitate the exchange of experience, the transfer of best practice and the joint development of innovative solutions".

Politics and economics are inextricable from each other, and globalization involves the integral connection of both of these realms. Since power, decision-making and policy-making are all experiencing changes of scale, it follows that transnational municipal networks are a natural development within this context.

Fenton (2017) has compiled ideas from various authors about TMNs, providing a good summary of the information found elsewhere in the literature. Among others, he discusses Bouteligier's categorization of the roles of TMNs: "(1) to exchange information, knowledge and best practices; (2) to increase cities' capacity; and (3) to voice cities' concerns in the international arena" and Feldman's argument that "networks perform three vital functions in regard to environmental problems: (1) generating and diffusing information; (2) undertaking effective policy evaluation strategies; and (3) initiating local response efforts without waiting for national efforts".

Fenton describes the observations in the literature that TMNs can be hierarchical (top-down) or horizontal, global or regional in scope, and focusing on one or more topics or policy areas. Members of TMNs usually pay a fee in return for services, such as "networking, knowledge transfer and capacity building, the coordination of interests, participation in events or projects, [and the] promotion or dissemination of information". Yet Fenton writes that it is difficult to attribute the activities undertaken by cities to their membership in a network, because of the public availability and widespread 'leakage' of information, knowledge and norms. Use of this information by non-network-members is described as 'free-riding', implying that it has a value that should be compensated.

Some scholars believe that in serving as platforms and forums, TMNs bring together and diffuse experience, allowing members to develop capacity, collaborate on projects, and learn how others manage similar problems. Feldman, for instance, calls this "glocal cooperation". Giest and Howlett go so far as to say that "TMNs are the institutional foundation for a concerted effort in climate change within and between countries". Others, including Dolowitz et al., note that policy diffusion is often based more on convenience and similar circumstances than on finding and adopting best practices. Support from national governments is important for enabling TMNs to do their work, and local context colors the kinds of solutions considered and implementation capacity. Furthermore, TMNs tend to repeatedly involve the "usual suspects" in terms of membership and institutional lens, such that there is a large group of "invisible cities", and the types of solutions can lack new inspiration (Fenton, 2017). Fenton suggests that "this may require a re-conceptualisation of some TMN approaches or activities".

2.5 Summary of theoretical findings

The complexity of global environmental challenges, and their integral relationship to other political realms such as social and economic policies, have changed the way governance is conceptualized. No longer purely a realm of government, at least in many liberal democracies in the Global North, 'governance' now refers to the interactions between actors in all sectors of society that influence policy-making. The question of what level of government is responsible for what aspects of policy-making and implementation is therefore becoming an issue of debate. Because there is no binding authority or economic incentive at any level of governance to create a shift toward a more ecologically sustainable future, hope is instead being placed in normative and holistic approaches that will make ecological health be recognized as a requirement for social and economic health.

Cities are viewed as the best level of government for this integration of issues and policy goals, because national and international settings are too large for policy combinations to be feasible. Some scholars therefore find transnational municipal networks to be the wave of the future – a

forum in which vertical and horizontal partnerships will foster new and creative policy solutions that will prove to be much more practical and effective than single-level government can be, due to their being the best of both worlds: global knowledge and ideas, adapted and applied to local contexts. Others believe that national support is necessary for local success, and that the rationale for adopting policies is not (and will not become) one of finding and applying best practices, but will remain a matter of cost-efficiency and convenience. Differences in national political structures and priorities hinder policy cohesion in transnational municipal networks. However, developing standardizations for data collection and targets may ease this problem.

Network theory posits that cities will only join a network if there is a clear benefit to themselves, while recognizing that this benefit may come in the form of better visibility which can lead to the status and economic benefits of being leaders and innovators. Those actors most involved in networks are the ones who wish to have their interests met. Membership in this 'inner circle' involves the sharing of knowledge and resources. Along with the benefits come obligations and restrictions, and in TMNs there seems to be a small group of cities and ideas that are becoming the "usual suspects" or hegemonic regime, causing a narrowing of the options being considered.

2.5.1 Theory-based expectations

The theories presented in this chapter would lead us to expect cities to interact in certain ways within their networks. *Table 1* on the next page presents the main hypotheses/expectations about the results of the empirical research.

Chapter 3 describes the methods used in this research to test these expectations. In Chapter 6 these expectations will be compared to the actual results of the empirical findings.

Table 1. Expectations derived from the theories

These theoretical explanations… NB: "Sustainability" refers here to all related issues addressed by the TMNs in this study: climate change, water resource management, sustainability and resilience.	**… in sections…**	**…would lead us to expect the following empirical results:** NB: "Participants in TMNs" is abbreviated here as "TMNs".
• Networks form when there is a clear benefit to members.	2.3.2 →	***Expectation 1: network benefits*** Cities will join TMNs only is there is a clear benefit to membership.
• There is growing awareness and interest in the interaction between government levels towards sustainability goals. Collaboration is present but not yet fully developed. This may lead to policy redundancy.	2.2.2 →	***Expectation 2: vertical relations*** TMNs will seek to define their roles by *differentiating* their tasks from other levels of government while looking for ways to *collaborate* vertically. Cities may experience vertical policy redundancy.
• International regimes are top-down hierarchical, while TMNs are inherently horizontal. MLG encourages peer-to-peer learning and information sharing. • One benefit of participation in TMNs is the exchange of experiences and best practices, for the purpose of joint innovation.	2.2.3 → 2.4	***Expectation 3: horizontal relations*** TMNs will distinguish themselves from international organizations and national governments and will focus on building horizontal exchanges with other cities.
• National subsidies greatly add to municipal success in achieving sustainable policy goals. • Without sufficient economic incentive, cities will not switch to greener practices.	2.2.2 → 2.2.3	***Expectation 4: financial means*** Cities that receive subsidies or other financial support will be more willing and successful in developing and implementing steps towards greater sustainability.
• Interest networks and policy networks (government) are supported by discourse communities and policy communities (ideas, knowledge and expertise). • Public opinion and issue networks (subgovernment) are essential in public decision-making. An informed citizenry is therefore important.	2.3.2 → 2.2.2, 2.3.2	***Expectation 5: knowledge and influence*** City policy-making will be influenced by the knowledge and technology they seek by building relations with experts, and also by citizen demands and public opinion.
• In advocacy coalitions, success is based on shared knowledge, common goals, and agreement on how to pursue solutions.	2.3.2 →	***Expectation 6: common goals and strategies*** Members of TMNs will try to create common goals and strategies.
• Networks create preferences and shape technological and organizational practices. Membership holds both benefits and constraints.	2.3.2 →	***Expectation 7: level of policy freedom*** Members of TMNs will experience both expansions and limitations to their operational maneuvering room.

Chapter 3 – METHODS

3.1 Research methods

In the empirical research for this thesis, I used a qualitative approach with observational data collection. Desk research was used to orient myself in this research field. Operationalization was done through case studies of nine organizations. This involved semi-structured interviews with experts and network participants, attendance at a kick-off meeting for a city network, and participation in an online webinar.

The method of analysis used in this research is *congruence analysis*, with the subtype *complementary theories approach*. Congruence analysis is small-n research that "applies a plurality of theories and derives its conclusions by comparing the level of congruence of these theories" (Blatter & Haverland, 2012, p. 161). As opposed to co-variational analysis (COV), which looks at the causal effect of X on Y; or causal-process tracing (CPT), which aims to identify the conditions and/or mechanisms that lead to the given research outcome; congruence analysis (CON) uses a combination of theories to achieve a comprehensive explanation of the research results while discussing the relative importance of the selected theories (idem., p. 29).

Below are descriptions of each of the research categories applied for this thesis.

3.1.1 Desk research

Online literature research using Google, Google Scholar and Scopus, supplemented by library books and course materials, provided the background information necessary for my understanding of the practical and theoretical aspects of this topic. The websites of city-to-city networks and, where applicable, their parent organizations, introduced me to the individual networks and allowed for initial comparisons.

One means of determining the terms to input on internet was through 'snowballing' from the automatic suggestions. However, to not miss important areas in the literature, I also regularly started searches with new terms. I found these new terms through discussions with my professors, contacts in the field, and key words from the literature. For example, the term *city-to-city learning*, which I thought was the 'hot topic', did not deliver much, but *city diplomacy* and *sub-state diplomacy* did – yet these are very broad fields which required a lot of sifting to find information specific to sustainability, so further refining was necessary. Additional terms such as *city networks* and *resilience* added new depth to the topic. As the research progressed and I started conducting the interviews, I learned the terms used by people working in and with city networks, which better focused my searches.

3.1.2 Interviews

To learn about a variety of viewpoints on city-to-city networks, I conducted interviews with experts at international and city levels, as well as academic researchers and engineers. In selecting interviewees, the intention was to find experts in a variety of institutional settings, to shed light on the different aspects of these networks. Section 3.4 explains in more detail how the cases and respondents were selected.

Interviews for this thesis, listed here in chronological order, were conducted with the following people:

- Martin de Jong, Professor at the Delft University of Technology, Department of Multi-Actor Systems (Delft, April 13, 2017)
- Peter Scholten, IHS institute for housing and urban development studies of Erasmus University Rotterdam (Rotterdam, May 3, 2017)
- William Veerbeek, Project Manager for city-to-city learning at UNESCO-IHE Institute for Water Education (Delft, May 9, 2017)
- Dave Zervaas, Programme Management Officer at the UN Office for Disaster Risk Reduction (UNISDR), Geneva (skype conversation, May 18, 2017)
- Bradford Swing, Director of Energy Policy and Programs, City of Boston (telephone conversation, June 13, 2017)
- Alexis Dufour, Water Resources Engineer at San Francisco Water Power Sewer, and currently a guest at Deltares (Delft, June 15, 2017)
- Wynand Dassen, Manager at the City of Rotterdam (telephone interview, June 15, 2017)
- Joyeeta Gupta, professor of environment and development in the global south at the Amsterdam Institute for Social Science Research of the University of Amsterdam and UNESCO-IHE Institute for Water Education (Delft, October 4, 2017)

Brief conversations were held with Uta Montalvo-Wehn, Associate Professor of Water Innovation Studies at UNESCO-IHE Delft (Delft, May 12, 2017) and with Willeke van de Groep, Project Coordinator at Broekbakema Architecture Bureau in Rotterdam (October 21, 2017). Relevant information from a previous interview with Tamsin Mills, City of Vancouver, Canada (spring 2016) is also included in the empirics chapter.

In addition, the interviews conducted for an article written in June 2016 were very useful for my understanding of city-to-city networks. A complete list of interviews, which includes those from the spring of 2016, is given alphabetically by last name in the References at the end of this thesis.

3.1.3 Other forms of direct information-gathering

- On January 31, 2017 I attended the kick-off meeting of the BEGIN Project (Blue Green Infrastructure through social innovation), funded by Interreg Europe and initiated by the Municipality of Dordrecht, the Netherlands. There I met planning and government representatives of the ten NW-European cities and several research institutes involved, and started learning about their difficulties and questions as well as strengths they can share. The cities involved in the BEGIN project are: Aberdeen, Antwerp, Bergen, Bradford, Dordrecht, Enfield, Ghent, Göteburg, Hamburg and Kent. The other participants are from CIRIA (Construction and Industry Research and Information Association), Erasmus University Rotterdam, Royal College of Art, TUHH (Hamburg University of Technology), UNESCO-IHE and University of Sheffield.
- This spring (February and May) I also had email contact with Professor Harriet Bulkeley of Durham University in the UK. Professor Bulkeley is an expert on city-to-city learning and multilevel environmental governance. She helped me to focus my research question.
- On June 8, 2017 I participated in the webinar "A Northwest Vision for 2040 Water Infrastructure", hosted by CH2M and organized by Rhys Roth, Director of the Center for Sustainable Infrastructure at The Evergreen State College, Olympia, WA, USA. The information provided was helpful in understanding the regional situation of water managers in Washington and Oregon, US. The webinar speakers were Rhys Roth (Center for Sustainable Infrastructure), Radhika Fox (CEO of US Water Alliance), Chuck Clarke (CEO, Cascade Water Alliance), Liz Kelly (Vice President, CH2M), Bobby Cochran (Executive Director, Willamette Partnership), Judi Gladstone (Strategy & Government Affairs Director, Drainage & Wastewater Department, Seattle Public Utilities), and Julie Davies O'Shea (Executive Director, Farmers Conservation Alliance). Two questions that I sent in to the webinar were answered by the speakers; the answer in which my name was mentioned specifically is at time 55:44 on the YouTube video of the webinar: https://www.youtube.com/watch?v=aOl9nECpeps&feature=youtu.be
- On October 5, 2017 I attended the PhD defense of Jolene Lin at Erasmus University Rotterdam, for which Prof. Joyeeta Gupta was on the opposition committee. Jolene's excellent defense and her thesis, entitled "Governing climate change: Global cities and transnational lawmaking", was very helpful in consolidating my ideas and conclusions for my own related research topic.

3.2 Why these methods are appropriate

The choice for a qualitative study comes from the nature of my thesis topic and the fact that due to the limitations of time and access, the number of cities that I was able to research was small.

The findings from a quantitative approach would have suffered from too small a sample and would not have been representative (Onderco, 2017).

A great benefit of using semi-structured interviews is that it allowed me to adjust my questions throughout the conversation based on what I learned from the respondents, and to ask them more in-depth questions about their experiences and areas of expertise. Listening to their stories in an open structure furthermore allowed them to tell me what *they* found important, and much of this was information I would not have known to ask for. Interestingly, in this fairly open means of conversation, the topics and points of success and concern that the respondents discussed overlapped significantly, strengthening my findings.

The choice of congruence analysis is appropriate for two reasons. First, because network theory would be the obvious explanatory framework for transnational municipal *networks*, and yet multilevel governance theory also includes a network component. A comparison of network and multilevel governance theories can therefore contribute to the scientific discourse. Second, due to the open nature of the interviews, the empirical results led to a broad spectrum of information and personal observations, as the respondents each described their own individual experiences and the situation within the network or networks that they are part of. The outcome was not specific but was instead a collection of a variety of themes and points made. The aim of the research was therefore not to find a cause for a specific outcome, but rather to discover what theories best explain the observed results.

3.3 Relation to methods previously used to research this topic

Case studies seem to be the most-often used method of researching adaptive governance and urban resilience. Carlsnaes et al. (2012) wrote that global environmental problems have usually been researched through case studies; they therefore recommend large-n quantitative studies to complement previous studies in this field. However, as mentioned at the start of section 3.2, time and access constraints did not allow for that in this research. In city diplomacy, all studies that I have found have indeed been qualitative. In urban water management as well, the literature comprises qualitative and largely normative approaches. Rebekah Brown is one of the leading researchers in this field. In various articles with other authors, she has laid the groundwork for how to look at government changes in urban water systems, including creating a framework for operationalizing adaptive governance in urban water management, strategic programs for transition in urban water management, social learning and experimentation in government, etc. Her work is largely based on case study analysis.

Bos & Brown (2012) point out that public works projects tend to focus on technological solutions, while the role of governments has been undervalued in this process, noting that "empirically little

is known neither on how governance experimentation actually unfolds nor about its effectiveness for socio-technical transitions". At the first workshop of the BEGIN project, the issue of the disconnect between public works and other segments of municipal government (fellow stakeholders in the process who, among others, control the relevant budgets) arose as a discussion point.

3.4 Case selection

There are innumerable city-to-city networks in existence today. They spring up for a variety of reasons, have a wide range of goals, are initiated by many types of organizations, and vary in duration. The case studies for this research were selected with the aim of showing a variety of types of organizations and networks active in TMNs. For the purpose of the research topic of this thesis, the networks selected are all active in the areas of sustainability and resilience, and particularly the two most common areas of global environmental governance being addressed by TMNs, namely: 1) carbon emissions reduction, and 2) the security and management of water resources.

In selecting interviewees and other respondents, an attempt was made to capture perspectives from the four categories of initiating organizations highlighted in this research: international organizations (UNISDR, ICLEI, and the BEGIN project), municipal governments (San Francisco, Boston, Rotterdam, Dordrecht, C40, and i-SUSTAIN), the private sector (Rockefeller Foundation's 100 Resilient Cities program, and CH2M) and academic institutes (Erasmus University Rotterdam, Delft University of Technology, UNESCO-IHE, University of Amsterdam, and Durham University). This variety is necessary for being able to examine the different types of collaboration and interaction within TMNs. In addition, the respondents who were intentionally contacted were selected because of the prominence of their organization in TMN activity and because of their personal position of leadership and expertise within their organization. Others, however, were found by happy coincidence; they, too, added useful information and perspective.

Due to the nature of the city-to-city projects and networks, even though the individual respondents were employed by organizations that fall under one of the four categories, they all were working with partners across other sectors in vertical and horizontal (government and non-government) networks. Some cases were difficult to categorize, because I had not previously defined 'initiator'. For example, does 'initiator' refer to the person or organization that came up with the idea, or is it the organization that provided the funding and/or other resources to make it possible? This will be further discussed in the analysis chapter.

I was very fortunate that finding interviewees was possible largely through my existing network, to whom I am very grateful. Dave Zervaas (UNISDR) is the father of fellow student, who upon

hearing about my topic introduced us in the UN lunchroom during our class visit to Geneva. Martin de Jong (Delft University of Technology) is a colleague of my husband's. The fortunate discovery of Peter Scholten (IHS at Erasmus University Rotterdam) was made when I was doing an online search for the contact information of my thesis supervisor, who has the same name. Joyeeta Gupta (UNESCO-IHE and University of Amsterdam) was introduced to me by a friend who was completing her PhD under Dr. Gupta's supervision. Brad Swing (City of Boston) is a friend of a friend. I had interviewed Berry Gersonius and William Veerbeek at UNESCO-IHE in the spring of 2016, and for the same article I was asked to contact Wynand Dassen at the City of Rotterdam. When I happened to meet Berry in the train and told him about my Master thesis topic, he kindly invited me to attend the kick-off meeting of the BEGIN project, and William and Wynand were willing to speak with me again for this new research project. Alexis Dufour (San Francisco Water Power Sewer) was introduced to me by another fellow student, who was acquainted with Alexis through her internship at Deltares. Rhys Roth was a college classmate of my husband's and is now director of the Center for Sustainable Infrastructure at the Evergreen State College. Rhys hosted the regional webinar for urban planners and utility managers and was also involved in an international city-to-city learning tour organized by i-SUSTAIN.

Chapter 4 provides background information about the TMNs the respondents participate in.

Chapter 4 – CONTEXT

4.1 The aim of this chapter

This chapter provides the context in which to understand the empirical findings related in Chapter 5. It does so by giving a brief historical and institutional overview of the organizations and networks with which the respondents are associated, as well how they are connected to each other and to global environmental policy. As background to this information, section 4.2 describes how the world's main climate-related TMNs formed.

As mentioned earlier, as one way of exploring the differences in the kinds of interactions between the myriad of TMNs that have sprung up in recent decades, this thesis categorizes TMNs according to four types of initiators: 1) international organizations, 2) municipal governments, 3) private organizations (for-profit businesses as well as non-profit NGOs), and 4) academic institutes. Section 4.3 introduces the contributors to the empirical findings (i.e., the interviewees and the participants in the project kick-off meeting and the webinar) according to these categories. An interesting part about this is unraveling the complex interactions between and among actors, since this layering of actors seems to be one of the obscuring factors in this field of research and action. Already in this small selection of actors, there is a great deal of overlap in terms of categorization.

4.2 A brief history of the most prominent TMNs

The overarching theme among the world's most visible TMNs is climate change and its consequences. While some networks have a focus on emissions reduction or energy innovation, others aim to be proactive in preventing floods in their cities. Members share knowledge, expertise and resources, with the aim of improving or speeding up their ability to successfully create policies for environmental sustainability and water resources management.

To date, participants of TMNs have overwhelmingly come from liberal democracies in the Global North. Municipalities in the Nordic countries have been particularly dedicated partners, due to their countries' strong commitments to climate goals. Partnerships with cities in the Global South have been slow to develop, in part due to a lack of resources and capacity (Europe funds a number of Southern climate initiatives), but also due to the feeling of many Southern countries that

climate change goals must first be realized by the Global North, while the South catches up economically. This debate continues in the UN and World Bank at the national level.

Encouraged by the numerous international goals and agreements, which have significantly contributed to the shared understanding of the global environmental problem, but frustrated at the slowness of national and international processes in the face of the urgent need, cities and private (mostly philanthropic) organizations have started forming international and regional municipal networks, taking action themselves to combat climate change. In short, the UN stirred the pot, and those with access to funds took up the baton.

The IPCC and UNISDR, described below, are two UN-based organizations that provide support to national and local governments and TMNs. This section further describes an EU project that functions as a TMN, a local initiative supported by the UN, a local initiative backed by philanthropic support, and a philanthropic initiative.

4.2.1 UN initiatives

IPCC → The International Panel on Climate Change (IPCC) was founded in 1988, together by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), as a body to provide scientific and technical information to help national and local governments reduce their greenhouse gas emissions. IPCC regularly produces Assessment Reports. The first, in 1990, led to the creation of the United Nations Framework Convention on Climate Change (UNFCCC). The second, in 1995, provided material for the Kyoto Protocol. IPCC also produces Methodology Reports, which help UNFCCC Parties to prepare their national greenhouse inventories. In addition, IPCC produces Special Reports and Technical Papers. See Figure 1.

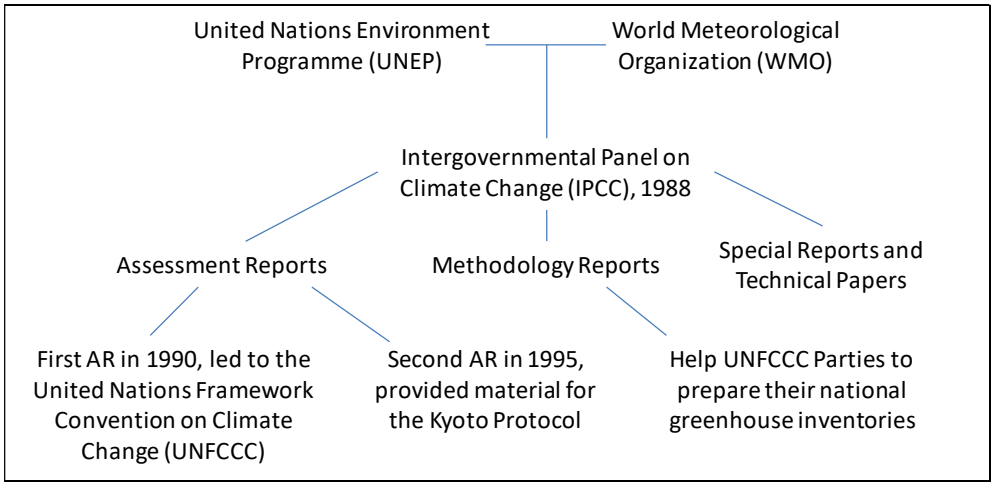


Figure 1: IPCC

UNISDR → The 1990s were the UN's Decade of International Natural Disaster Reduction, in response to the General Assembly's decision to integrate disaster risk reduction into the efforts toward sustainable development and environmental protection. A World Conference on Disaster Reduction was held in Yokohama in 1994, and the UNISDR was officially launched in 2000. The 2002 World Summit on Sustainable Development in Johannesburg gave the ISDR a concrete plan of action, and further action plans are regularly reviewed and evaluated. See Figure 2.

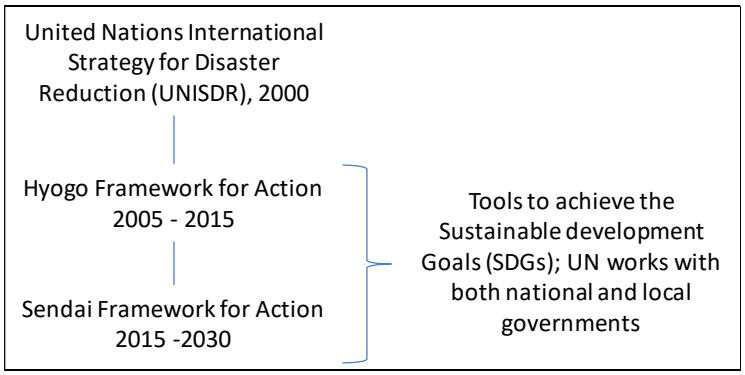


Figure 2: UNISDR

4.2.2 EU initiative

CoMO → The Covenant of Mayors Office (CoMO) is a project of the European Commission that supports local climate and energy initiatives. It is one of a number of European Union efforts that work on climate issues, including, among others, Energy Cities, which is supervised by CoMO. See Figure 3 for further information of how CoMO fits in its organizational scheme.

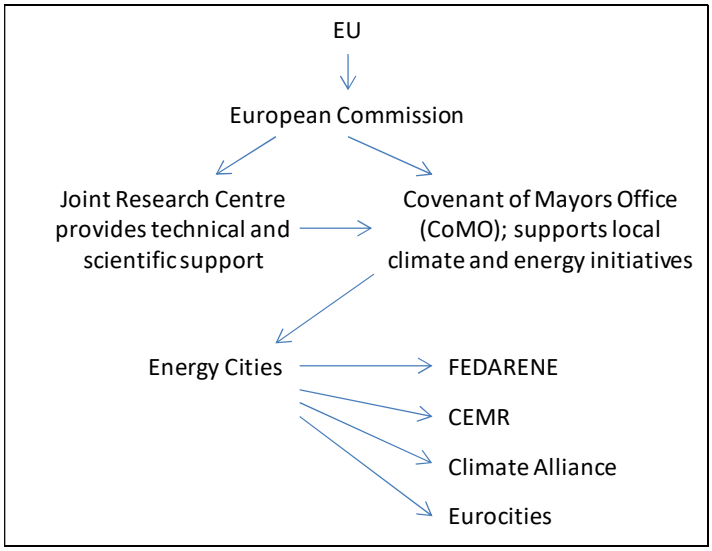


Figure 3: CoMO

4.2.3 Local initiative with UN support

ICLEI → The International Council for Local Environmental Initiatives (ICLEI) was founded in 1991 by 35 local government leaders in the US and Canada, with the support of the UN Environment Programme (UNEP) and the now obsolete IULA. One of the major projects started by ICLEI is the Cities for Climate Protection (CCP). See Figure 4 for more detail.

Figure 4: ICLEI

4.2.4 Local initiative with philanthropic support

C40 → The C40 Cities Climate Leadership Group (C40), founded in London in 2005 with the purpose of joining municipal forces to reduce greenhouse gas emissions and associated climate risks, is financed by philanthropic subsidies from Bloomberg Philanthropies, The Children's Investment Fund Foundation, and Realandia. Its current membership is 90 international cities, including a Steering Committee of Amman, Boston, Copenhagen, Durban, Hong Kong, Jakarta, London, Los Angeles, Mexico City, Milan, Paris (Mayor Anne Hidalgo is the current Chair of C40), Seoul and Tokyo.

4.2.5 Philanthropic initiative

100 Resilient Cities → The Rockefeller Foundation launched its 100 Resilient Cities campaign in December 2013 to celebrate the foundation's 100th anniversary. Using input from stakeholders,

the project developed a City Resilience Index, a planning and decision-making tool for sustainable urban growth and citizen well-being. Through an application process the foundation selected 100 cities around the world to participate in the project.

4.3 Networks and organizations researched in this study

Having gained an understanding of TMNs in a broad sense, those researched in this study will now be introduced.

4.3.1 International organizations

UNISDR: Dave Zervaas, Program Management Officer at the UNISDR (United Nations Office for Disaster Risk Reduction) in Geneva explained how the UN has been involved in campaigns to bring experts together at many levels of government, including the municipal level. One of these areas is disaster risk reduction. Among others, the UNISDR launched its participatory website PreventionWeb in 2007 to facilitate communication among disaster risk reduction specialists around the world. "Over the decades, disaster risk reduction has moved from a narrowly perceived technical discipline, to a broad-based global movement focused on sustainable development" (UNISDR History website).

The UNISDR has a largely normative function: ensuring that nations and more local actors fulfil their commitments to international agreements such as the Sustainable Development Goals. The organization's main task is to serve as a catalyst for action. It brings people together at the local level, often through collaboration with academic partners, in workshops and projects. One of the new approaches throughout the UN in the organization's way of working is fostering knowledge management, which means encouraging local participation (e.g. towards achieving the SDGs) and continuity in the knowledge base (e.g. preserving knowledge throughout the transfer of power in local governments), as well as building the knowledge base among citizens by means of stimulating local participation in projects.

4.3.2 Municipal governments

Boston (USA): Brad Swing, Director of Energy Policy and Programs for the City of Boston, discussed the high level of motivation across sectors in Boston for climate change action and urban sustainability. The city has several climate-related platforms, coordinated by the Boston Green Ribbon Commission, a top-level stakeholder engagement organization. These include Climate Ready Boston and Carbon Free Boston. Within the city, there is a network of philanthropic organizations which fund many of the climate and energy initiatives, among which the Barr Foundation is a large contributor. Boston further participates in the Global Warming Solutions Act, a state-wide program adopted in 2008 by the Massachusetts Department of Environmental Protection. Nationally, it is a member of the Urban Sustainability Directors'

Network (USDN), of which the Carbon Neutral Cities Alliance (CNCA) is one of the projects. Boston is also a member of the steering committee of the international group C40, which is funded by private businesses and runs, among other programs, Cities for Climate Protection (CCP). Additionally, it is one of the cities selected by the Rockefeller Foundation for the 100 Resilient Cities program.

Dordrecht (Netherlands): Ellen Kelder, Program Manager Water at the City of Dordrecht, is the founder behind the BEGIN project (Blue Green Infrastructure through social innovation). Dordrecht is a leader in sustainable ('future-proof') water management, is a strong networker and actively encourages citizen participation. BEGIN is a project that brings together ten European cities and six research institutes for the purpose of sharing knowledge and strategies for water management and flood protection. The project was approved for funding by the EU's Regional Development Fund, specifically through the North Sea Region of Interreg. BEGIN is organized by a private consulting group. William Veerbeek of UNESCO-IHE is on the team that coordinates the communication and meetings for this project and was one of the interviewees for this thesis.

Rotterdam (Netherlands): Rotterdam is a leader in urban resilience innovation. The city is putting a lot of effort into developing its first Integrated Resilience Strategy, supported by 100 resilient Cities. With this, it is creating connections between citizens, businesses, government and other sectors, towards increasing resilience: making the city socially, economically, and environmentally 'future-proof'. Wynand Dassen is one of the leaders in these efforts. Rotterdam is part of a number of TMNs, including C40 and 100 Resilient Cities; and the national program Agenda Stad (City Deal). The city was also one of the parties involved in recently establishing the Global Center of Excellence for Climate Adaptation, which was created by UN Environment, Japan and the Netherlands.

San Francisco (USA): In San Francisco, the push for climate change adaptation comes from local constituents. The city is very strong in the area of sustainability innovation and action. In 2007 San Francisco recognized a disconnect between the scientific community and public utilities, and it decided that it needed to get a better grip on understanding and mitigating climate change. The city convened a conference that started the Water Utilities Climate Alliance, which connects academic researchers with utilities and has hosted monthly conference calls with utilities staff in numerous cities around the US for years now. San Francisco is a member of a number of regional water alliances, among which the Water Resources Foundation, a member-funded organization of utilities that pools money to conduct research, policy papers and engineering that benefits members. Alexis Dufour of the Public Utilities Commission sees one role of city-to-city networks as a bottom-up means of influencing and guiding national decisions about the direction for

research and funding. He is currently in the Netherlands working with water experts at Delft University of Technology and Deltares to learn from them and bring back ideas to his city.

4.3.3 Private organizations

No representatives of private organizations were interviewed for this thesis. However, many of the projects described in the empirics chapter are supported through private funds. In this research, most of the private organizations learned about are not founders or initiators of city-to-city networks and projects. Instead, they are approached by municipalities, who in most cases are the initiators of TMNs. The exception is the Rockefeller Foundation, which instigated and runs the 100 Resilient Cities Program. The cities of Boston, San Francisco and Rotterdam are all involved with this program.

4.3.4 Academic and research institutes

Universities and other educational and research institutes can be excellent partners for city-to-city learning projects. Academics are often in a position to be able to think broadly and to develop ideas and partnerships that municipalities often do not have the budget or personnel to initiate. Some academics, such as Martin de Jong at **Delft University of Technology** and Joyeeta Gupta at the **University of Amsterdam** and **UNESCO-IHE**, work in a number of fields and projects, combining their knowledge and expertise in their contributions to sustainability discussions. Others dedicate themselves to coordinating specific projects, such as William Veerbeek at UNESCO-IHE, who is currently working together with the City of Dordrecht to coordinate the BEGIN project.

Academic institutes can also be home to internal research centers that have a specific ongoing function, such as sustainability. **Erasmus University Rotterdam**'s Institute for Housing and Urban Development Studies, where I spoke with governance and sustainability specialist Peter Scholten, is one such example. Another is the Center for Sustainable Infrastructure (CIS) at **The Evergreen State College** in Olympia, Washington (USA) is an example of such a center. CIS Director Rhys Roth organized the webinar "A Northwest Vision for 2040 Water Infrastructure" this past spring. The large number of participating water managers, listed in section 3.1.3, come from a variety of sectors throughout Washington and Oregon, showing that building connections for sustainability is understood as being very important in the US Pacific Northwest. In another project, CIS partnered with i-SUSTAIN in September 2017 to lead a delegation of Washington state legislators and elected officials, senior administrators and private sector participants to research how Denmark and Sweden have used sustainable infrastructure and renewable energy projects to boost national and local economies.

4.4 Summary of network information

There appears to be a lot of overlap in membership and sponsorship, which was not expected before the research began. This confirms, however, network theory's claim of the "usual suspects" being the ones always involved.

Funding and sponsorship is necessary for participation by cities; sponsors therefore have a strong influence in agenda setting within the networks, as they are the ones to give the go-ahead for projects. In most cases researched, the most significant portion of project funding comes from private organizations. The exception is where national subsidies are available.

Projects tend to be primarily staged around knowledge sharing platforms. This information sharing is important in these early stages of global environmental governance. But in-person conferences are rare, and thus real influence is weak. Due to their nascent state, many networks seem to be more trendy than actually leading to action. But perhaps we must view this as a work in progress. The next chapter will shed more light on the actual inner workings of TMNs.

Chapter 5 – EMPIRICS

5.1 Introduction to the empirics chapter

This chapter presents the findings collected during the empirical research. This information is synthesized from the interviews, the project kick-off meeting, and the webinar.

5.2 Empirical findings as they relate to the theoretical expectations

This section summarizes the main themes and ideas that arose from the various conversations and interactions. The semi-structured nature of the conversations and interactions means that the empirics do not directly follow the theoretical expectations. However, to structure the answers in such a way that they can be compared in the next chapter to the theories presented in Chapter 2, an initial organization will be made here according to the theoretical expectations presented in sub-section 2.5.1.

5.2.1 Expectation 1: network benefits

Expectation 1 states that cities will join TMNs only if they would benefit from membership. William Veerbeek (UNESCO-IHE Delft) confirmed the network theory when he said, "There has to be a clear benefit for people to want to join a network", and also when he explained that incentives include the motivation that comes from being part of a network (particularly if cities can bring in their own project/s, such as with the BEGIN Project), money for research or implementation, and recognition. This recognition can come in the form of city branding.

In the Netherlands, examples of this kind of branding are that Rotterdam is promoting itself in the areas of resilience and low carbon, The Hague is known for its peace and justice efforts, Amsterdam is working on smart cities initiatives, and Utrecht brands itself in healthy urban living. Veerbeek and Martin de Jong (Delft University of Technology) concur that especially the assertion of having a low carbon footprint is a step ahead of reality, as progress in this area is only slowly emerging, but with high-tech solutions cities can nonetheless profile and market themselves as being leaders in this area, and this in fact is a motivating factor for others as well.

Wynand Dassen (City of Rotterdam) says of his city's membership in the Rockefeller Foundation's 100 Resilient Cities program that it is "inspiring to be part of a worldwide movement". 100 Resilient Cities provides a platform for partners and private parties to share knowledge. Dassen says the Rockefeller Foundation has a mission to improve the world. They have invested a lot. They provide knowledge, develop knowledge, organize the city network, have a vision and a mission, and have selected 100 interesting cities with real problems but also real motivation to find solutions and that have a head start in doing so. Also, the foundation has such a big sphere of influence that it's interesting for private parties to associate with them.

Brad Swing (City of Boston) says that perhaps the greatest value of membership in city-to-city networks is participating in study tours that offer the opportunity to see how other cities approach governance strategies and financing models. Technical knowledge transfer is useful, e.g. energy design. Policy development is possible when it is project-based, such as with creating green building standards.

De Jong finds that the local context determines policy-setting. Cities are hands-on organizations that need to please their citizens through the provision of services. In this sense, he noted that in terms of drawing lessons and learning from each other, cities do not copy each other, but they certainly inspire and motivate each other. Swing notes that in the US government is disaggregated, and that every municipality has its own legal structure and governance culture, making policy transfer difficult. Yet it is incredibly valuable and illuminating for one's own reflection to see other's problems and the solutions they are working with.

In the experience of Dave Zervaas (UNISDR), cities learn if they have a genuine interest in doing so, and if they have similar contexts, problems, and kinds of people: i.e., if the networks are representative of their own experiences. Veerbeek adds that it is important to 'shake up' the mix of participants, e.g. so that Brits don't always team up with other Brits but learn from other systems altogether. Dassen says that if peer-to-peer learning is to be worthwhile, it must focus on targeted learning objectives. "Cities should go home with a couple of new perspectives on their problem."

That said, it is important to define problems narrowly. When the scope gets too large, common interests and strategies become diffused. Several of the interviewees mentioned, for example, that although the 100 Resilient Cities Program is interesting on paper, and it does provide necessary funding, the scope is simply too large. 'Resilience' covers nearly all aspects of societal life, and interactions with the city's Resilience Officer were few and far between. Learning, it seems, needs to be more focused to be effective.

5.2.2 Expectation 2: vertical relations

An empirical example of cities' desires to pursue vertical partnerships for sustainability is that Rotterdam is currently setting up the Global Center of Excellence for Climate Adaptation, a project for the UN and initiated by the Dutch government. The UN has an important normative and initiative function: Dave Zervaas of the UNISDR related that since the 1960s and '70s the UN has been stimulating cities to work together on a variety of issues. The organization finds it important that cities not only learn from higher organizations through a hierarchy but also from each other. The literature also suggested the normative and inspirational function of international organizations such as the UN.

On a national scale, the city of Rotterdam is teaming up with about eight other Dutch cities in the City Deal (*Agenda Stad*) program, supported by the national government. They are trying to build a regional coalition, with the goal of developing new technologies and give the region more international visibility and attract international customers for its water and climate expertise. Toward this end they are working with Dutch water boards, the Delft University of Technology, UNESCO-IHE Delft and Erasmus University Rotterdam, among others. Success is clearly being booked in visibility, as shown by the recent New York Times article highlighting Dutch expertise in high-tech engineering and water management (see Kimmelman, 2017). Another program initiated at the national level to stimulate regional coordination is the Delta Program, focusing on collaboration between government and private parties, and between cities and their broader metropolitan areas.

At the European level, the EU is stimulating collaboration between cities, for which it has many financing programs and subsidies. Cities are invited to team up, make a proposal, and try to participate. Dassen says that Rotterdam is involved with a network of about 7-10 cities, working on resilience. Representatives from these cities visit each other, find a common challenge and work on it together to develop solutions.

Vertical relations can be based on ideas and other creative and practical support, but the empirics show that it is often a financial relationship. Veerbeek explained, for example, that the BEGIN project, initiated by Ellen Kelder of the city of Dordrecht, and whose academic partner is UNESCO-IHE Delft, is funded by Interreg Europe, a European level policy learning program for public authorities.

Vertical policy redundancy was not specifically discussed with the respondents. However, in the US, for example, there is a maze of legislation and regulations among the various levels of government which makes it intransparent – at least to the author – as to which instructions have priority and what the range of possible action is. Similar redundancies exist in the EU.

5.2.2 Expectation 3: horizontal relations

Veerbeek notes that networks often form purely though existing relations. This is true in the networks studied for this thesis. This is also confirmed by Fenton (2017) in his summary of transnational municipal network theory, when he mentioned that they tend to be composed of "the usual suspects". Generally, Veerbeek says, there is a scientific partner affiliated to a city. I did not come across any mention of academic partners in the literature. Yet the empirics show that academic partners are crucial to networks because of their knowledge dissemination abilities, as well as their apolitical stance towards policy-making. Although they sometimes are initiators, universities and other research and educational institutes are often invited by others (usually governments) to contribute to networks, as either partners or consultants.

Expectation 3 states that cities in TMNs will focus on building horizontal exchanges with other cities. The empirical findings show that developing strong and lasting connections with other cities is not so easy. Dassen says that in network development, interaction and continuity are important – "It's a pity if it's just goodbye". This means a large time commitment. Cities that seek intensive idea-sharing with other municipalities must create the time for those new projects. It's valuable, though, and worth the investment. For the coordinators, it also involves a lot of planning. Asked to help develop a C40 academy on climate adaptation this past June, Dassen had to consider the technicalities, the format, how to arrange the interactions, and how to make it inspirational and give it real content. He wanted to make it educational and planned to include a showroom of methodologies and solutions that could be applied to certain problems – e.g. a water square, storm surge barriers, etc.

Members of TMNs share information through working groups, conferences, studies and their websites. Personal, face-to-face interaction was mentioned by several interviewees as being much preferable to distance communication (emails, skype, etc.). Dassen, Swing and Veerbeek find that the personal contact achieved during workshops and meetings not only makes the learning more interesting and meaningful, but also much more understandable. In conference calls, for example, participants have very little personal interaction, and non-visual communication is difficult when participants have limited English. Furthermore, personal contacts facilitate long-term, continued interaction and follow-up.

5.2.3 Expectation 4: financial means

The interaction and continuity mentioned in the previous sub-section is costly, and funding is a real issue. Real collaboration, says Veerbeek, depends on money and resources. Dassen mentioned a collaboration that had been set up by UNESCO-IHE with Egypt, and that such projects with developing countries are funded by the World Bank and IMF. Continuity is an interesting topic for peer-to-peer learning: how do you organize it? Donor funding is needed, but to get the funding you have to spend some money, and there is always a risk that you will not succeed. "It takes a million to spend a billion." Investment depends on local city politics.

Municipal spending on transnational network activities is sometimes contested by City Councils that question the purpose and validity of spending precious funds from a tight budget to send people to international conferences in order to solve local issues. However, this cuts off a useful means of learning and inspiration. Yet for a city to take action in sustainability policy and to invest time and funding in network memberships, its constituents must also approve of these goals.

The city of Boston has coordinated this well. Along with strong private philanthropic foundations, the city is supported by several internal sustainability groups, such as Climate Ready Boston, Carbon-Free Boston, and the Boston Green Ribbon Commission, the latter of which is a combined

effort of prominent players in Boston civil society, including a major hospital. The city is actively committed to networking and is furthermore a member of a number of national and international sustainability networks, including 100 Resilient Cities, C40 (in which Boston is on the steering committee), USDN, and CNCA. These networks provide further funding for sustainability projects.

Continuing from these findings, expectation 4 states that cities that receive subsidies or other financial support will be more willing and successful in developing and implementing steps towards greater sustainability. Government can initiate networks, but to do this, they need to have sufficient funds available for that aim. Usually this means that larger scale governments are the ones who do the initiating of intergovernmental as well as municipal networks.

Larger cities do sometimes have the funding to start their own networks with other cities. This is sometimes done regionally, for agencies such as public works departments, since they share water and energy pipelines and grids, and also since they share similar physical environments and weather patterns. This is the case, for example, with the water department of the San Francisco Utilities Commission, which is member to the Water Research Foundation.

Willeke van de Groep expressed her optimism about real change in Dutch city energy policies. This is due to the fact that the Dutch national government dedicates funds to local projects such as the greening of existing buildings. In this research, this type of national funding is unique to the Netherlands.

Private organizations form the third category of organizations that initiate and fund city-to-city and intra-municipal networks. Examples are the Rockefeller Foundation's 100 Resilient Cities program and, as mentioned, Boston's Green Ribbon Commission. The Rockefeller Foundation sets up exchanges: for example, Dassen reported that representatives from eight cities came to Rotterdam for three days last fall. Rotterdam was able to showcase some of its own projects and strategies. It also facilitated 'deep dive' discussions. Mexico City has a large area with water management problems. They prepared their case in advance and presented it at the meeting. Rotterdam mobilized local city experts to come to the meeting and discuss the issues and hep come up with solutions. Most importantly, says Dassen, the exchange was funded by the Rockefeller Foundation; without this support, funding is a serious limiting factor to transnational exchanges and collaboration.

In the Global South, funding issues are very different. William Veerbeek, who works intensively with the city of Dhaka, says that most projects are co-financed by international organizations (generally the World Bank and IMF) and private donors. National funding is non-existent in Bangladesh, as in many other countries in the Global South. There is a competition for funds, since projects are dependent on this donor money. Veerbeek notes that there is a lot of money in the

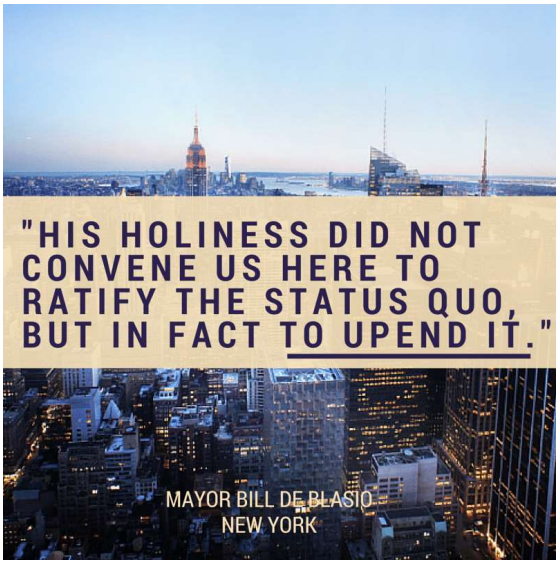
private sector in developing countries, but that public-private partnerships are very underdeveloped. Private parties are never at the table, such that there is never enough funding for policy creation and implementation. Veerbeek believes that this may put developing countries at a disadvantage on the international playing field, since private investment often creates motivation and inspiring innovation, in addition to attracting further outside investment, and he therefore recommends that developing countries rethink the relationship between government and the private sector.

Liz Kelly of construction engineering company CH2M also stressed the importance of public-private partnerships. In her US context, private support is often a key factor in being able to carry out action plans. The literature points out the pivotal role of funding in cities' abilities to develop and implement new and sustainable policies. With so many potential funding sources in existence, it would be useful to somehow coordinate efforts.

5.2.4 Expectation 5: knowledge and influence

Expectation 4 is that city policy-making will be influenced by the knowledge and technology they seek by building relations with experts, and also by citizen demands and public opinion.

Citizen support and political will is crucial to policy action in democratic states: to provide a mandate, dedicate funds, and commit capacity. Alexis Dufour (San Francisco Public Works) pointed out that there can also be vast sub-national differences, giving the example of how the citizens of San Francisco in the US are very pro-environment and are in full support of the city spending resources towards climate change mitigation, but that in Miami, where the governor of Florida does not recognize climate change and it is therefore not an issue that is discussable in policy-making within the state, only small, reactionary measures are being taken. In other words, Miami is working on raising street levels and other immediate physical constructions based on current predictions, but it does not have the broad-based societal and political support that is needed to think more broadly within the budget scope about longer-term solutions. This is a clear example of how local visions and goals determine what solutions will be aimed for, and what the public discussion will include. Network theory includes the idea that citizen and stakeholder attitudes and preferences are part of what



determines policy decisions. The national differences described by Gupta can be expanded to include sub-state differences that also affect the municipal action radius.

Capacity is an important requirement for the successful development of sustainability policies, and Dave Zervaas and William Veerbeek discuss it from their experience with being on the organizing side of municipal networks. They both say that it is important to find and train leaders who can motivate local people, someone they know and can rally around. These leaders will have an interest in making their place a better place to live. Most often, they already have lots of ideas about how to create positive change and just need the resources and support that can ignite their ideas. Veerbeek is very practical in his approach: he says that to ensure inspiring leadership, you need to find a local champion who people will relate to and listen to, then train that person in leadership capacity, give them the tools to be successful – funding, support, continuity.

Sometimes this leadership comes from creative, out-of-the box thinking. An inspiring example comes from Tamsin Mills (Sustainability Department, City of Vancouver, Canada), who in a 2016 interview told me about how she used her own department's budget to send colleagues from the wastewater department to a conference to convince them of the need to change their way of working. It was successful; they came back very enthusiastic and the two departments could then coordinate efforts much better. This intra-city collaboration between departments is a very valid horizontal path toward cooperation. Peter Scholten of IHS Rotterdam mentioned this as typical of the Dutch policy mentality; perhaps this can be shared at the TMN level.

Uta Montalvo-Wehn (UNESCO-IHE Delft) related that in her experience in working with a number of African countries, policy is made by foreign consultants – often through international development programs – but the policy is not implemented well if: 1) there is no attention given to capacity development, and 2) the local context and existing local knowledge is not considered. Related to this, Dave Zervaas said that the UN has an official training program, but when civil servants who are trained and skilled, and who have built up policy experience, are moved to other posts or areas, that knowledge and capacity is lost. They themselves need to ensure that knowledge and training trickles down to their successors, but this knowledge transfer is something that needs to be better addressed in all TMNs and municipal governments.

5.2.5 Expectation 6: common goals and strategies

In a newsletter of September 29, 2017, Rhys Roth wrote that CSI's delegation to Denmark and Sweden that month "came back brimming with ideas for bipartisan collaboration on infrastructure solutions". An evening of drinks and speakers was organized to present the findings. Through collecting and sharing information, CSI works on "building consensus around smart strategies" for community infrastructure challenges. Perhaps this is the key: building consensus about what needs to be done and strategies for doing it, and then each community or

city can develop their own policies based on their own unique local political, stakeholder and funding circumstances.

Part of creating common goals and strategies is defining a system of evaluation. Creating a way to evaluate the success and effectiveness of municipal networks is something that has not yet been done very systematically. Ostrom's comment in sub-section 2.2.2 that there needs to be a common system of data analysis and assessment holds true for municipal networks. In the end, as Zervaas recognizes, there are no 'magic bullets'. Networks and city learning will simply have to develop over time. The literature acknowledges that environmental governance is an emerging field, and that it is important to develop shared terminology as well as standards for measurement and evaluation.

William Veerbeek found in his research in city-to-city learning (2016) that it is important to take small steps which can be successful, rather than ambitious ones that can fail and lead to demoralization and lack of willingness to try further. "Take small steps and do not expect miracles", he says. Things take time and must be evaluated before proceeding. In the BEGIN project he encourages the participants to try ideas out at home that they learned at the meetings, and see if they fit their local context and adjust them to fit their own needs. Measurements and evaluation tools are essential for this.

Cultural background is a factor to be considered in policy learning studies and practice. For example, European and Asian leadership and networking styles are quite different (Izuhara, 2013; Webber, 2016). Fulton (2007) therefore stresses that policy-making, in order to be effective in local contexts, should be done by people who are significant in their own cultures. Exploring intercultural communication would add significantly to the aim of achieving global solutions to urban policy problems. Henk Ovink, Dutch Special Envoy for International Water Affairs says, "Collaboration is not the same as integration. It's about acknowledging the differences and creating a process in which those differences are valued" (Ovink, 2016).

National priorities and ways of working can sometimes hinder or delay agreements and partnerships between cities in different countries. In agreement with the MLG theory presented by Gupta, the importance of national differences was highlighted in the interviews with Martin de Jong (Delft University of Technology) and Peter Scholten (IHS Rotterdam) – both of whom are academic researchers in the Netherlands whose work has included projects with China.

Scholten mentioned national culture, politics and world view as important determiners in governmental decision-making, for example the level of support for climate change action. He talked about the differences in governance: the Dutch approach is that of network governance – searching for the best ways to link with stakeholders and how to manage that process – while the

Chinese approach embodies rationality theory and is top-down. He also pointed out a general need for developing countries to reconsider the public-private balance. The two countries' approaches to policy separation or integration also differs: Chinese municipalities have fragmented policy domains, e.g. water is a separate issue from spatial development; whereas Dutch municipal departments tend to have integrated policy domains. Scholten terms the Dutch approach 'boundary spanning': linking parties and combining efforts to find mutual interests, create common decision-making and implementation strategies, and achieve policy goals as well as cost-efficiency.

De Jong corroborated this idea, saying that the Netherlands is strong in seeing systems concepts, whereas China is indicator-oriented and focused on GDP. For example, if Chinese developers of a piece of land meet targets within their local domain, they get a promotion. But if these targets are met by placing a waste facility far outside of town, the local indicators may rise but the overall environmental gains are negligible. Coordination between agents and levels to achieve large-scale success is difficult.

Having a common problem is often the start of useful collaboration. City-to-city networks are established for the purposes of knowledge exchange, practical projects, and sharing things that cities have adopted. The topics worked on in these networks are those that are important to the member cities. In terms of effectiveness, Dassen says it helps to have a common goal and real (shared) problems to solve; cities need each other. This is in line with the 'interest networks' and 'advocacy coalitions' mentioned in the network theory.

De Jong points out the environmental learning happening in cities. Changes are happening in citizen lifestyles and progress is being made toward sustainable consumption. Industry is recognizing the potential in resource circularity: reuse and recycling. The term being used for this is a 'circular economy', and this involves climate change mitigation and industry adaptation.

De Jong also mentions that having a shared terminology is important. As new terms such as 'resilience' come into circulation, it helps if they do not get watered down. Resilience started as a term referring to ecological sustainability, but now is also used also in relation to economic and social stability. This warp in terminology makes proclamations of resilience meaningless. Perhaps, says de Jong, this is intentional, since if a concept is elusive, it connects to a variety of issues. However, if too many issues are lumped together, municipal politicians and policy-makers tend to respond to immediate needs instead of working toward a long-term vision.

5.2.6 Expectation 7: level of policy freedom

As stated in the network theory section, being part of a network means that some limitations are imposed on participating cities. This is perhaps sometimes not even done consciously. For

example, the difference in national system can be seen in the different ways of working between countries represented in TMNs. The American way of thinking is different than the Dutch way, and cities that belong to a US-based network must work in that framework and format. This restricts the freedom to do things their own way. But, as Dassen (Rotterdam) said about participating in the 100 Resilient Cities program, the benefits more than offset this. The Rockefeller Foundation is willing to try new formats; they want to make their work a success. Dassen gave the example of Rotterdam's resilience scan, which the Foundation wanted to apply in the rest of the network, while giving Rotterdam the credit for this new tool. In this way the wishes of participating cities are respected. Here, network theory is confirmed in both the benefits of membership and its constraints in terms of being bound by the vision, mission and sphere of influence of the (private) sponsor.

Policy freedom or restriction in TMNs also carries the aspect of compliance with agreements. From the perspective of the UN, Zervaas explains that it's easy to get countries to draft and sign declarations; the difficulty lies in keeping up the momentum. When they start, countries are motivated and want to implement the new policies, and if they stay with a program long enough, the chances are higher that they will indeed follow through. Declarations and strategies are good first steps. Zervaas doesn't see much difference in implementation rates if these declarations are legally binding or not; it still requires a lot of work to effectuate them. If the problems affect families, implementation is more likely. The UN helps to create activities that benefit cities: programs in the areas of environment, disaster risk reduction, development, etc. The UN can get official intent and get agreements made, set plans for future work and to catalyze implementation. Service providers help to match knowledge partners with cities. However, the animo for project implementation unavoidably lies at the local level.

The following chapter will compare and contrast these empirical findings with the theories presented in Chapter 2.

Chapter 6 – ANALYSIS

6.1 Introduction to the analysis chapter

In this chapter the empirics will be analyzed in terms of the theories presented in Chapter 2. In Chapter 7 this analysis will be used to answer the research question and sub-questions.

6.2 Comparison of findings to theories

To be able to easily and directly compare the findings to the theories, the findings are summarized here using the same structure as that used to describe the theories in Chapter 2. Therefore, the summary begins with a sub-section about the findings that relate to multilevel governance, followed by a sub-section focused on network theory.

6.2.1 Multilevel governance

1) International organizations can set new norms and sketch new pathways in environmental governance, but they do not have much direct impact at the municipal level. National policy contexts, on the other hand, have a strong influence on what solutions are considered, and what are possible, at the municipal level.
2) It is necessary to have vertical funding collaboration and support. Funding limitations often hinder the full fruition of municipal networks. Large cities are more likely to have the necessary funding and capacity than medium- and small-sized cities. Donations and sponsorship from philanthropic foundations, international organizations and national governments can make projects possible at a local scale.
3) Because of this funding issue, local governments are usually not the ones to initiate city-to-city networks. National governments do not tend to fund environmental governance projects, either, due to the decentralization of this policy area. Instead, the initiators are most often international organizations, academic research institutes, or philanthropic organizations.
4) Inspiration and ideas, as well as technology, knowledge and capacity, can be provided through vertical and horizontal international, transnational and regional channels. However, implementation depends on the local context. Successful implementation depends on building up local capacity and resources, as well as public information campaigns to diffuse the knowledge among all sectors of society.

6.2.2 Network theory

1) Municipalities have different mandates and tasks than national or regional governments. They are therefore not a substitute, nor should they be considered the main focal point in global environmental governance. Rather, the roles and responsibilities of the different government levels should be more clearly defined, and funding and other support should

be allocated as necessary to accomplish the agreed upon policy goals. Depending upon national regime, these goals can be mutually agreed upon or locally determined. International organizations can provide encouragement and direction, and can bring actors together.

2) It is helpful to have public-private partnerships and academic partnerships within municipal networks, since these provide support both with funding and with solution innovation.
3) Stakeholder and citizen support is vital for the mandate and continuity of environmental policies. In liberal democracies in the Global North, this is because politicians need to heed their constituencies. In some developing countries, continuity is impeded by political regime changes that transfer civil servants or discontinue programs, thereby causing a loss of knowledge and experience.
4) Networking is possible due to digital communication developments (internet-based programs and technologies). Yet despite the basic level of connection achievable digitally, regular and continued personal interaction and connection is highly preferable in peer-to-peer learning networks because it allows for more meaningful collaboration.

6.3 Relevance of theories to findings

The aim the congruence analysis method, chosen for this research, was to discover which of the theories – multilevel governance or network theory – is better as a tool to predict the main unit of analysis, namely the interactions between members of TMNs. Although both of these theories contribute well to our understanding of TMNs, multilevel governance (MLG) matches perfectly while only some aspects of network theory apply. Part of the reason for this is that MLG includes a network component. Section 7.3.1 provides further explanation of this conclusion.

Chapter 7 – CONCLUSIONS

7.1 Answers to the research question and sub-questions

This chapter begins by answering the research question and sub-questions, in preparation for a more thorough discussion in the following sections. Because the answers to the sub-questions build toward the answer to the main research question, they will be presented first.

Sub-questions:

1. *What kinds of interactions can be found within TMNs?*
   Sharing of experiences, knowledge and technology, and occasionally resource pooling.
2. *How do these interactions impact the ways in which cities take part in global environmental governance?*
   Policy transfer is not an action point in TMNs. However, building consensus about what needs to be addressed and what strategies can be used will likely build competences and capacity among city government actors to be able to more effectively work with constituents and stakeholders in developing locally appropriate solutions.
3. *Does the type of network initiator influence the type of interactions that take place within TMNs?*
   It is important that cities find recognition of and support for their policy problem in the other members of their TMN. Therefore, the instigator of a TMN must understand the issues and challenges that its members face. At first glance it might appear obvious that cities themselves would be in the best position for this, and grass-roots initiatives enjoy a positive appeal. However, since TMNs do and must include multiple levels of vertical governance actors and depend on a broad array of horizontal stakeholders, cooperation between all of these levels is important. The type of network initiator can therefore be considered insignificant if the key quality of understanding is met.
   This said, there are some definite differences between the four types of initiator recognized in this study. International organizations act as catalysts and encourage local action. They can set guidelines and common goals and do provide capacity building services, though these often do not sufficiently take into consideration local traditions, priorities and power relations. Municipal governments that work collectively to develop a network will look for common goals, shared funding and guiding principles for their network. Private organizations such as the Rockefeller Foundation impose requirements and scope on network members but are sometimes open to a change in these formats. Academic institutes tend to bring in new ideas, partners and material to the discussions and can provide a forum in which to hold meetings and conversations among network

participants. However, their interests not being directly at stake means that they may steer the direction according to their own research goals or expectations.

Research question:

How do the interactions of cities within transnational municipal networks (TMNs) explain the role of cities in global environmental governance?

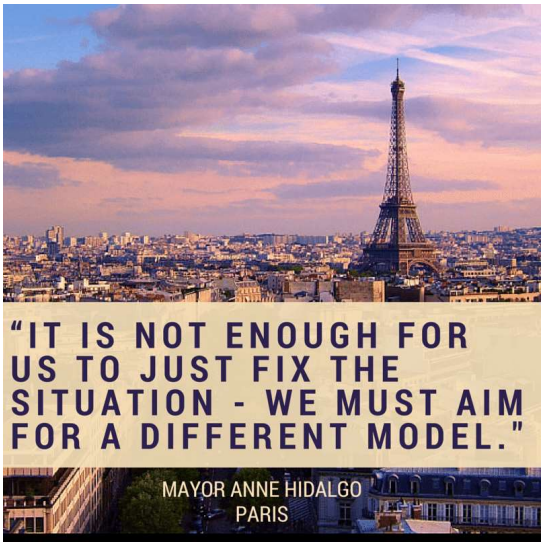
TMNs are a good platform for sharing knowledge, information, resources and technology. They can inspire and motivate cities to take new directions with policy solutions. Municipalities have different mandates and tasks than national or regional governments. They are therefore not a substitute, nor should they be considered the main focal point in global environmental governance. Rather, the roles and responsibilities of the different government levels should be more clearly defined, and funding and other support should be allocated as necessary to accomplish the agreed upon policy goals. Depending upon national regime, these goals can be mutually agreed upon or locally determined. International organizations can provide encouragement and direction, and can bring actors together.

7.2 Conclusions drawn from this research

Cities are very excited about knowledge sharing. They find it to be inspiring and that it helps them in their own work by allowing them to consider the situations of others. Nonetheless, it takes a lot of time and effort to be part of a city network, and fast results in policy changes are considered by respondents to be unrealistic. Furthermore, in the transnational and regional municipal networks that were studied for this thesis, a high level of individualism and localism was retained by the participants. The main benefits of network interactions were related as being inspiration and new ideas, as well as funding for projects. Actual practical solutions seemed very difficult to transfer from one local context to another. Policy learning was not mentioned by the respondents at all, other than those in academia, either as something attempted or as something even aspired to in the networks. Sometimes network organizers impose (intentionally or unintentionally) their own cultural and economic expectations on network projects, goals and scope. However, in some cases it is possible to stretch these through communicating and making known that the constraints do not allow for some solutions that do not fit them.

Cities and transnational municipal networks are therefore not a substitute for the governance function of national governments and international organizations. Multilevel governance theory holds diverging expectations about this, and it should be noted that each governance level has its own responsibilities and should keep them unless a solid plan is in place for the transfer of these responsibilities to another government or private actor. Although cities play a large role in

governing their own local arena, networks do not have the ability to significantly influence policy goals on a global scale, because local context is such a determinant in policy outcomes. In the context of global environmental governance, what is necessary is discussion, interaction and mutual support among the many levels of government and horizontal partnerships with citizen stakeholders, private interest groups and research institutes.



Funding is the greatest enabler of TMNs and regional networks. The enthusiasm for their independent potential therefore needs to be tempered, and instead a system for practical, coordinated and continuous communication with funding agencies about the direction for action needs to be established. Financing is usually shared between the municipality and a donor: sometimes a higher level of government, as in EU-funded research projects, but usually – especially in the US – a private philanthropic foundation. Because municipalities experience limited freedom within networks as to the types of projects and experimental solutions they can administer due to their dependence on outside funding, these funding sources should be included in discussions at the international and national level about policy aims and targets, with the aim of informing the funding agents about the real needs and thus being able to steer the choice of projects undertaken within networks. The local component of funding, on the other hand, is dependent on citizen and political will. Therefore, efforts toward public education and citizen and stakeholder involvement need to be continued and strengthened.

Sustainability and resilience are two buzz words in environmental policy these days. Although 'sustainability' refers mainly to ecological well-being and 'resilience' is used to describe the ability of cities to respond effectively to changes and shocks in natural, social and economic situations (e.g. rising sea levels or mass migration), they both embody the idea that in order to achieve long-term success in preserving the livability of human habitats (and urban environments in particular), it is necessary to consider the health of ecological, social and economic systems as a whole, since they are integrally connected. It is increasingly recognized that the success of social and economic systems is not possible without healthy ecosystems – which, in the context of global environmental governance, refers to environmental systems on all scales: global, regional, and local. Given that ecological and economic aims have traditionally been seen as being at odds with each other, and given the growing awareness that we need to consider social, economic *and*

ecological justice and sustainability, there is a need to redefine both transnational and local priorities and ways in which we can work toward achieving them. Cities have begun to compete in this area, branding themselves as 'green' cities to attract businesses, residents and international funding. To some extent, 'green' solutions appeal to the shifting public attitudes and are increasingly economically viable. But the reality is that the economic incentives are not yet great enough to make cities want to invest in policies and innovations that will lead to real change.

In the Global South, funding for municipal involvement in knowledge sharing networks is largely dependent on the WTO and IMF. Although my study included only networks that are mainly active in the Global North, it appears that the political, economic and social contexts of the Global South may be different enough to make policy transfer and the formation of common (global) goals and targets difficult in North-South municipal partnerships. The exception to this is through academic institutes, which purposely try to bring these groups into contact, with the understanding and imperative message that global environmental challenges can only be solved through truly global cooperation.

7.3 Implications for theory and policy

7.3.1 Theoretical implications

Multilevel governance theory currently offers a rosy picture about TMNs. While it's true that city-to-city networks are very useful for inspiration and the exchange of technical solutions, the growth and success of TMNs are not matters of pure willpower. Policy learning is limited by differences in local contexts. Together with low levels of citizen and stakeholder support for the issues, insufficient monetary availability or financial incentive constitutes the primary barrier to cities' willingness and ability to adopt sustainable policies. In order to move forward, multilevel governance theory must therefore look more closely at the impact of subsidies and private financing (philanthropic or otherwise) on the options available to municipal governments in developing and implementing new and more sustainable policies. It should furthermore be more specific in defining the potential roles of local leaders (in understanding the local historical and current situation, and in rallying focused and critical support from citizens and stakeholders), as well as the positive roles open to national governments as central information coordinators and facilitators of exchange.

As actors that are not completely independent, municipal governments as members of TMNs do not fully fit into network theory. Their vertical and horizontal relations are not between equal players, with the exception of other municipalities, and thus the expectations from network theory are somewhat skewed. The main message from network theory for TMNs is that there has to be a benefit to membership. Creating that benefit depends on defining common and clear goals and strategies, together with sourcing funding for projects and policy-making efforts. Because

these goals and funding sources inevitably shift, perhaps it would be useful for network theory to further explore TMNs as part of the research on complex adaptive systems (CAS).

7.3.2 Policy implications

The biggest lesson that emerges from this research is that environmental governance is so complex in terms of issues and actors that it requires a long-term, whole-systems approach; the municipal level alone is not able to create the required policy changes. It is important to define what the changes are in the expectations regarding the role of cities in environmental governance, to reduce policy redundancy between government levels. In thinking about this, it should be noted that at least currently, cities are more able to share technical innovations than to transfer policies, because policy-making and implementation depend heavily on the local context.

Once the initial stages of orientation and discovery of what others are doing in the areas of sustainability and resilience are completed – the phase that is now being manifested by TMNs – cities need to source the funding and capacity to develop detailed, realistic plans for their own local contexts. Because environmental governance is a new policy area, and because TMNs tend to be focused on a small set of active municipalities, the exchanges currently ongoing in TMNs must be developed and spread to new regions and actors, and an attempt must be made to coordinate efforts through the creation of a standard set of long-term goals that can then be worked out according to what works and what is appropriate for local circumstances.

To support these municipal efforts, regional or national governments need to fulfil a coordinating and facilitating role in developing standardized targets and goals, helping to attract funding, and in disseminating knowledge, technology and resources – including to smaller municipalities that have a harder time gaining the attention needed to attract these needed funds, capacity and resources. International organizations must continue to stimulate action around the world through knowledge exchange and activism, as well as bringing actors together in forums and conferences, because face-to-face contact is far more inspiring and effective than only digital or telephone contact.

The literature studied for this thesis did not include academic institutes in the list of actors within multilevel governance. Yet academic support is a key success factor. Academic institutes are valuable as facilitators, knowledge creators and distributors, and they do not have explicit political agendas.

In liberal democracies, the most effective means of moving forward with a concerted policy effort is to gather citizen and stakeholder support. This will lead not only to funding (either directly through contributions or through being able to attract funding agencies) but also to a long-term commitment to continued innovation, project-based solutions, and policy development. These

efforts can be supported and enhanced by the participation of academic research and through public-private partnerships, as well as by sourcing local leaders who can understand and inspire the local context.

7.4 Limitations of this research

Issues such as climate change and the protection of transboundary natural resources such as air and water require global attention and collaboration on all fronts: law, national politics and legislation, research and innovation, finance and economics, international relations, civil society and individual behavior. Yet scholarly attention in this area has traditionally been focused on the Global North. Because ecological, economic and social justice are heavily interrelated, scholars are finding it important to not only continue to search for solutions among countries in the Global North, but to also actively join efforts with the Global South and especially developing countries, since they play a crucial role in the development of environmental governance. This draws attention to an essential theme in multilevel governance, namely *inclusion*, which also involves stakeholder engagement, accountability, consensus, liabilities, cost efficiency and fairness between parties, and considerations for future generations.

The omission of the Global South in much of the literature, in addition to my own empirical research being conducted mainly among my own network, together with the fact that local policy and decision-making processes are not often translated into English, led to my being unable to research much more than the US and European contexts for this thesis, and within that narrow scope, only that information available in English or Dutch. More examples of information sharing between the Global North and the Global South would broaden the perspective and range of possible solutions.

Further limitations include the narrow time frame and scope of this study, while there is so much to learn about TMNs, their potential functions, and how to organize global environmental governance. The next section offers some possible directions for future research.

7.4 Suggestions for further research

In order to find a new and truly sustainable paradigm for the world, it would be very useful to compare the explanations offered by theories used in this research to those that can be provided by green theory. Green theory calls into question not just anthropocentrism, but also the assumption of the world's two hegemonic economic systems – liberalism and Marxism (Arsel, 2017) – that natural resources are inexhaustible, and that therefore economic growth is always desirable (Eckersley, 2013). This would expand the space of the discussion regarding solutions, perhaps allowing for a paradigm shift that would eliminate the game of chicken that stops people from daring to take the bold steps that we as a world need to take.

In many ways, globalization brings exciting new possibilities. Yet the pace of change, growth and integration is "too fast for many people to make sense of" (Gallagher & Werksman, 2002). Because the process is so large, complex and dynamic, it is important for policy-makers to take an integrated approach when finding conceptual models that will help them be able to understand what needs to be accomplished and what means are effective in their particular situation for moving forward. Medium-sized cities are the fastest-growing but do not yet enjoy the benefits of being part of these networks, which are presently dominated by large cities. Medium-sized cities are still mostly on their own and as such are often unprepared in dealing with the new demands and pressing challenges. Discovering ways in which medium-sized cities can get involved is an area for exploration.

Bos & Brown (2012) point out that public works projects tend to focus on technological solutions, while the role of governments has been undervalued in this process. However, they note that "empirically little is known neither on how governance experimentation actually unfolds nor about its effectiveness for socio-technical transitions". More research in this area could look at communication means between municipalities, universities and the private sector.

The UN has been involved in instigating networks to help governments learn from each other, such as with its International Strategy for Disaster Reduction (UNISDR). However, these are usually focused on national governments. The changing relationships between national and local governments make it important to see if there is a role for cities in communicating with meta-organizations such as the UN.

Finding literature on ethnographic policy translation, says Martin de Jong, is difficult, and even if such tensions emerge, they are written about in terms that are subtle and almost stereotypical. The work of Hofstede (a prominent author in the field of multilevel governance) is also difficult to apply to this aspect of policy learning. The global nature of the environmental governance challenge means that more can be done toward understanding how culture affects policy learning. Ruth Webber, Communications Director at UNESCO-IHE Delft, from her vantagepoint of watching and following the city-to-city learning efforts at her institute, wonders if cultural differences in leadership style (degree of hierarchy vs. idea sharing) has an effect on TMNs – can participants who are accustomed to a hierarchical structure take leaders seriously who aim to elicit ideas from those of lower rank, and on the other hand, can participants used to non-hierarchical leaders work effectively under conditions where their freedom is squashed? When developing ideas about leadership in TMNs, this dichotomy must be considered.

City-to-city learning requires experimentation with different methods and strategies. Intra-urban communication on these issues is just beginning. As these networks grow and develop, it will be useful to find ways in which to steer and direct this growth to better serve public policy objectives.

In essence, the ongoing problem is how to conceptualize and describe TMNs and city-to-city networks in order to learn more about their place and role in global environmental governance.

This is a very broad research goal, which can be approached from a number of angles. These include but are not limited to: 1) how and why different collaboration methods are effective; 2) examples of and reasons for environmental policy successes and failures; 3) how outcomes are evaluated and by whom; 4) how capacities and roles can be divided among, and/or assigned to, the various levels of government and to other sectors of society, and also who then determines the goals and targets; 5) how much freedom is there in these networks to pursue local goals, and how much is regulated by the funding agency; 6) what cities hope to gain from participation; 7); 8) how TMNs are changing the relations between the Global North and Global South; 9) best ways to share knowledge and develop capacity; 10) how these networks evolve over time; and 11) how the options available to a city for policy adaptation are affected by the following factors: city size, local geology and ecology, funding availability and sources, citizen involvement, public-private partnerships, corruption within government and business sectors, technology, and capacity.

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Gupta, J. (Delft, 2017). Joyeeta Gupta is Professor of Environment and Development in the Global South at the Amsterdam Institute for Social Science Research of the University of Amsterdam and UNESCO-IHE Institute for Water Education.

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Mills, T. (skype interview, May 2016). Tamsin Mills works for the Sustainability Office of Vancouver, Canada.

Montalvo-Wehn, U. (Delft, May 2017). Uta Montalvo-Wehn is Associate Professor of Water Innovation Studies at UNESCO-IHE Delft.

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Lectures:

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